

Medical Times

A Monthly Journal of Medicine, Surgery and the Collateral Sciences

Vol. XL., No. 2

NEW YORK, FEBRUARY, 1912

Fifteen Cents a Copy
One Dollar a Year

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GENERAL SCIENTIFIC

A CONTRIBUTION TO THE PROBLEM OF THE THERAPEUTIC TREATMENT OF TUMORS THROUGH THE CIRCULATION, BASED ON CHEMOTHERAPEUTIC EXPERIMENTS ON TUMOR-BEARING ANIMALS.*

Prof. Dr. A. VON WASSERMANN and Drs. FRANZ KEYSER and
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Berlin, Germany.

Although during the last few years experimental chemotherapy has been fully established in certain protozoan diseases, chiefly through the classic work of Ehrlich, we are now, as before, still in darkness regarding the possibility of therapeutically influencing endogenous cells; that is, cells newly formed in the organism. In fact, as we approach this problem experimentally the possibility of obtaining success appears to be exceedingly small, even though the problem deals with nothing else than the construction of chemical substances which would attack such endogenous body-cells, but would not affect the normal organism. Whereas these antiprotistic chemotherapeutic remedies should be parasitotropic and not organotropic, to use Ehrlich's terminology, in this case they must be definitely organotropic, but only for a certain part of the organ, namely, the newly formed pathological tumor cells. In view of these difficulties and the failure of any success in this direction, it is not surprising that up to the present time the attainment of this goal has been considered an impossibility. Although the chances for the success of such experiments seemed from the first exceedingly small, we nevertheless continued work in this direction. It is clear that such experiments, dealing as they do with an entirely new field of research, could, for the present, be carried on only on animals. Thanks to the work of Jensen, and especially to the systematic method of breeding animal tumors (by Ehrlich and his co-workers as well as other investigators, such as C. Lewin, Bashford, and others), we now possess in the mouse tumors, designated by Ehrlich as carcinoma and sarcoma strains, excellent material for experimentation in this direction.

We shall not discuss the question how far these tumors re-

semble or are analogous to those occurring in men; this played little part in the solution of our problem, in which we desired to ascertain whether it would be possible to influence rapidly growing tumors by means of chemical agents introduced into the blood stream, at the same time keeping the body cells intact and without endangering the life of the diseased animal. In this respect the problem is identical whether one deals with mouse tumors or with malignant human tumors. In either case the object is to find a remedy which when introduced into the circulation will destroy the tumor cells in the living organism. In establishing our therapeutic results it was particularly important for us to determine whether mouse tumors have a tendency to retrogress spontaneously. From our observations based on thousands of animals, in the strains that we have used, we can assert that none of our tumors disappeared spontaneously, even when treated with ineffective remedies. Of course it must be assumed that the tumor has reached a certain size—about that of the stone of a plum, or the size of a small cherry—for then it belongs to the resistant forms of growth. Even with rough mechanical treatment, such as strong pressure or pinching, retrogression could not be brought about. Under these conditions a softening and inhibition of the growth are often noted, but these soon cease and give way to further growth and hardening. Even if ulceration is produced, the tumor never disappears entirely. The edges of the ulcer always remain infiltrated with tumor tissues.

This great resistance of the mouse tumors that we employed increased the difficulty of our problem, for in order to destroy the tumor cells, it was necessary to use either very powerful agents, or to find a remedy which would attack the life-giving elements of the tumor cells; that is, it was necessary to synthesize nucleotropic substances. It was clear to us from the beginning that a remedy which would add in any way to our knowledge of the experimental therapy of tumors, must be one which would exert a therapeutic action through the circulation. For all remedies that are allowed to act locally upon the tumor, whether they be ferments, rays, or emanations, do not possess the important property which we have pointed out above as being essential; namely, selectivity for the tumor cells, that is, the tendency of the medicament to reach, of its own accord, the tumor cells. A remedy requiring direct application to the tumor cells would not permanently solve the problem. Our problem, therefore, consisted in finding chemical agents which, when injected into the blood stream, would automatically reach and attack the tumor cells.

* From the *Deutsche Medizinische Wochenschrift*.

A starting point for our experiments came to us about a year ago, when at the suggestion of A. von Wassermann, of the Chirurgical Department of Professor Borchardt in the Rudolf-Virchow Hospital, we undertook to determine whether freshly excised carcinoma would live longer in blood from diseased patients than in normal blood serum.

For the determination of the viability of the carcinoma cells, we employed, at the suggestion of A. von Wassermann, sodium telluride and sodium selenide, which had been previously used for the same purpose by Gosio. These salts have the property of forming a black or red deposit of the reduced metals in the presence of living cells. The results of these tests were negative, as in both conditions a deposit of the metal was observed; that is, the normal serum had apparently not destroyed the tumor cells. On further examination, Wassermann observed that the selenium and tellurium were deposited only on certain definite parts of the carcinoma cells. The metals were deposited in places corresponding to the epithelial cells, and in the interior portions representing the most active elements of the tumor. This induced v. Wassermann to determine further whether there also existed in the living tumor-bearing animal an affinity between the tumor cells and selenium and tellurium salts. With this aim in view, we proceeded in the following manner. The tumor-bearing mice, which had been inoculated with carcinoma obtained from Professor Ehrlich, received local injections of solutions of the salts directly into the tumor. In a number of such experiments, after these injections, especially with the salts of tellurium, there developed a softening and liquefaction of the tumor which opened exteriorly, a process which in some instances led to a complete cure without relapse. Apparently in these two salts, substances were discovered which, when injected into the tumors, led to a destruction of the latter.

We next injected these substances directly into the circulation. The technique of these intravenous injections is a difficult procedure, as it frequently requires as many as eight injections to cure the tumor.

These intravenous injections of tellurium and selenium salts gave negative results. Besides, the salts were quite toxic, so that they could be used only in small quantities. The cause of the failure was clear; it lay in the fact that tellurium and selenium, injected intravenously, did not reach the tumors. It became necessary, therefore, to synthesize such compounds of these metals as would pass more or less directly from the circulation into the tumors. The principles of the method were announced by A. von Wassermann, at the Königsberger Naturforscherversammlung in 1910, when he stated, on the basis of Ehrlich's theories, that it might be necessary in similar conditions to construct a means for conveying a remedy to the desired part of the organism. It is clear that the problem of bringing selenium and tellurium to the tumor can be solved only by the formation of such compounds of these substances as would diffuse rapidly in the living organism.

Mouse carcinoma especially is poorly supplied with blood-vessels, and most of the nourishment is obtained at the periphery. Wassermann selected certain coloring matter of the fluorescein group as a medium for the rapid diffusion of these elements into the circulation. The next step was to unite selenium and tellurium loosely to certain fluorescein colors, like eosin, erythrosine, cyanosin and others.

In this manner, several hundred new chemical substances were prepared without any noteworthy progress. It was noteworthy that several samples of the same compound prepared in the same chemical manner would act differently from a biological standpoint even after preservation in sealed glass tubes, in the absence of oxygen and light. It was clear therefore that delicate biochemical factors came into play, which were the cause of our failures.

We obtained after a long time a preparation composed of

eosin and selenium, which required certain chemical treatment in order to make it active. This remedy is readily soluble in water.

Healthy mice, averaging 15 grams in weight, can tolerate a dose of 2.5 mg. injected into the caudal vein. The most evident symptom is a deep reddening of the whole animal, which begins immediately after the injection and continues with increasing severity, especially around the mouth, eyes and legs.

If a tumor mouse is injected with the same amount this symptom is not observed after two injections. After the third injection, it is evident, on palpation of the tumor, that it has softened; this softening is still more evident after the fourth injection, so that, to the touch, the tumor no longer feels hard but resembles instead a fluctuating cyst. The fluctuating sac becomes smaller, the tumor capsule becomes flabby and too large for its contents, and in fairly large tumors the outline of the circumscribed tumor is no longer present. After the fifth and sixth injections, the resorption continues; the sac grows smaller, and, if no other disease occurs, the tumor is finally entirely absorbed. Within ten days, the tumor has healed completely. Of course, complete cure does not always follow this course, especially with large tumors in which the destruction and the liquefaction and softening of the tumor contents proceed rapidly and violently. In this case, animals usually become sick, feel cold, and die. This occurs so often and constantly that there can be no question that the sickness has some connection with the resorption of the liquefied tumor contents. In these cases the animals succumb to the toxicity of the resorbed tumor masses.

As regards the question of relapse in apparently cured animals, it may be stated that we have kept these animals under observation for several months without the occurrence of a relapse. We have convinced ourselves that even if only minute remnants of the tumor cells remain, which happens chiefly when owing to practical reasons it is impossible to inject intravenously sufficiently large amounts of the substance, a relapse occurs rapidly.

If an autopsy is performed on a mouse in which the tumor presents to the touch the condition of softening or liquefaction, the macroscopic picture of the tumor, which normally is solid and greyish white, is colored intensely red and is surrounded by a colorless or only faintly reddish field. The remedy has deposited itself selectively in the tumor. It is also noticed that the tumor has more or less disintegrated and consists of crumbled masses, which are chiefly heaped up around the tumor and are entirely separated from the growth.

If an autopsy is performed on a mouse in which the process of healing has sufficiently progressed so that the tumor has been replaced by an empty sac, then in the place of the tumor one finds a lard-like detritus, which is colored in different shades of red, depending upon the intervals between the inoculations and the autopsy, and which has no trace of the original appearance of the tumor. One can, therefore, see macroscopically the therapeutic effect of these remedies.

The way in which this eosin-selenium compound can cause through the circulation in so short a time (within eight to ten days) the healing effect in the tumor, was thoroughly studied by von Hansemann.

At the suggestion of von Hansemann, the same experiments were made on two mice with spontaneous tumors, that is mice in which the tumor was not brought about experimentally by inoculation.

One mouse is still living, without relapse, three months after the cure, the other died fourteen days after the disappearance of the tumor. At autopsy, no macroscopic signs of the tumor tissue could be found.

The question of the behavior of this remedy towards the various kinds of tumors occurring in mice was also tested on one sarcoma and four different so-called carcinoma strains.

We are indebted to Professor Ehrlich for the sarcoma and for three carcinoma strains; the fourth carcinoma strain was obtained from Professor Schilling. No difference in the behavior of these strains toward the remedy could be observed. It seemed to us as if Ehrlich's sarcoma was brought more readily to a softening and cure than the carcinoma; here, however, the fact must be emphasized that in order to make the conditions more difficult, we selected an especially hard carcinoma.

Upon the basis of these facts we can state with certainty, that it is possible, with the aid of a specially prepared eosin-selenium compound introduced into the circulation, to bring about a softening and resorption of the mouse tumors, and if the size of the tumor is not too large in proportion to the body weight of the animal, a complete cure without relapse.

This establishes the fundamental scientific fact; that in spite of previous views to the contrary, it is not impossible to reach and destroy a tumor by the selective action of chemical compounds through the circulation. We wish to emphasize the fact, however, that we have no basis to indicate that this remedy would behave in a similar manner towards human tumors. We have not as yet approached this question. But it seems possible that with continued systematic efforts, progress in human tumor the. γ will be made. Since it has now been established that we possess in selenium and tellurium substances that are capable of destroying living tumor cells and that we have also found it possible by means of suitable chemical agents to reach the tumor cells through the circulation and so cause a curative action, it seems evident that biochemistry must be looked to for future progress in this field.

MICROMETER ADJUSTMENTS FOR THE MACKENZIE INK POLYGRAPH.

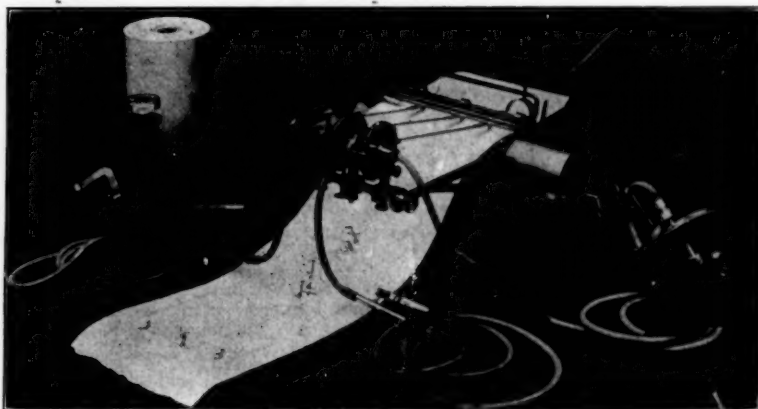
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The clinical use of graphic methods has been very much handicapped by the trouble and time necessary to adjust the apparatus. Smoked paper which was formerly used on most portable instruments has the disadvantages—first, the time and trouble of preparing paper which is easily smudged; second, the brief record which is obtainable. These difficulties were overcome in the Mackenzie Polygraph by the employment of a roll of unglazed paper and writing upon it with pen and ink. In the original instrument, the adjustment of the pens was made by turning the tambours up or down. As the motion is at a friction joint, the amount of pressure necessary to raise or lower the pens a given distance varied in accordance with the pressure exerted by the spring. On this account the adjustment of the pens to the paper was accurately obtained only after several experiments. The accurate adjustability of the pens is of much greater importance with an ink than with a smoked paper instrument, as there is much greater friction on unglazed paper, and the least excess of friction seriously interferes with the writing pens. This is shown in the accompanying tracing where use was made of the micrometer adjustment. In the first part of the tracing, the pressure was slightly excessive while in the latter part it was gradually relieved and ample excursion obtained without other adjustment.

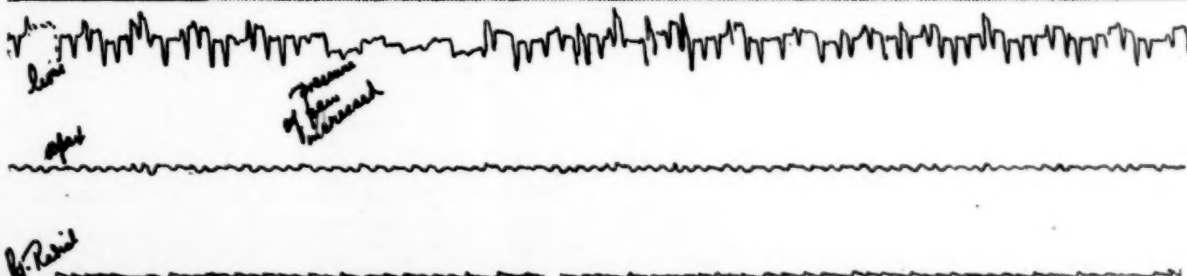
The adjustment consists of an elbow attached to the pin supporting the tambour through which a micrometer screw passes and rests against the latter. The tambour is kept in contact with the end of the micrometer screw by means of a bent wire spring shown in the illustration. This device raises the pen from the paper when the pressure from the screw is released,

and in this way a sufficiently delicate adjustment is rapidly obtained. Occasionally, the thickness of the paper varies or when considerable paper is unrolled there is an increased resistance to the pushing force in the mechanism so that the paper does not lie as flat on the table as at first, and the friction on the pens is increased. This is readily compensated by the adjust-



ment without interrupting the tracing.

When working with the modified McKenzie Polygraph made by Charles E. Dressler, it was found that the papers in some of the instruments would go to the side instead of rolling smoothly. After considerable experimentation, it was discovered that this was caused by inequality of the pressure exerted by the springs on the roller, for the paper always approached the side with the greatest pressure. To overcome this, a micrometer screw was so inserted in the cross bar indicated that the pressure of steel spring could be regulated and changed if necessary so as to compensate inequalities in the thickness of the paper. These improvements were devised so as to make the use of the polygraph less time consuming, and thereby induce more clinicians to employ it frequently so that the observations and records obtained might be increased.



A SYMPOSIUM

THE EFFECTS OF ATHLETICS ON YOUNG MEN.

Do present day athletic sports have a deleterious effect upon the participants in after-life?

This question is arousing widespread discussion and, as is usual, the answers differ to a considerable degree. The Surgeon General of the United States Navy, Dr. Charles F. Stokes, answers in the affirmative. In his report for the year of 1911 he takes up the subject at some length, in the following manner:

"The Bureau is of the opinion that competitive and spectacular athletics are undesirable in the service, especially among midshipmen who are prone to overtrain for, or hazard too much in, a contest.

The function of the Naval Academy is to equip young men mentally and physically for their chosen profession. Physical training and athletics generally should be indulged in so as to safeguard the interests of the Government and the individuals as well. While football may be somewhat hazardous as played, it is the disabling after effects that, in my opinion, make it questionable as a sport to be encouraged where future naval officers are being trained.

The prolonged rigorous course of physical exercises necessary to excellence in physical sports is believed to be dangerous in its after effects upon those who indulge in athletic sports sufficiently to excel therein.

When, under the conditions of service at sea, it becomes impossible to continue rigorous exercise, the individual easily falls prey to degenerative changes, tends to become obese, to lose physical stamina, and in the end he fails to render as many years of efficient service under service conditions as does his less athletic, but symmetrically developed, classmate.

Recently the medical records of 625 former athletes of the classes of 1891 to 1911 have been examined to determine the bearing of early overtraining upon physical efficiency in after life—9 have died and 12 have retired.

Of these 21 casualties, 6 have been due to tuberculosis, 8 to mental or nervous diseases (3 suicide on account of ill health), 2 indirectly to alcoholism, 1 death each to acute dilation of the heart and valvular disease of the heart, both directly attributable to track and crew racing, and 1 to an injury received in a football contest. Of the remaining 604 in the service, 198 have disabilities or abnormal conditions of sufficient moment to be of official record, and to which their record as athletes bears a possible or probable causative relation, and while not in most instances physically incapacitating the individual, tends toward an imminent or premature loss of service.

Of these 198, 48 are referable to the heart or blood vessels, such as arteriosclerosis, organic heart disease, heart murmurs, irregular or rapid heart action, and hypertrophied or dilated hearts. The joints or motor apparatus are involved in 16 and the kidneys in 11 cases. Seventeen are either frankly tuberculous or have had symptoms indicative of tuberculosis. Neurasthenia, associated with gastric complications in several instances, occurred in 16 cases. The presence of 25 cases of appendicitis and 15 of hernia in this series is of interest, espe-

cially in the case of the latter disability which appears to be associated particularly with a football record.

The opinion that long-distance crew or foot racing is not beneficial, but productive of serious harm, is one not held alone by the naval medical officer, but by those in civil life best qualified to judge, and it is believed that it needs but a decided stand on the part of an institution of the standing of Annapolis for the adoption of a "safe and sane" standard in these and other endurance contests to initiate a similar movement in the athletic world, making success dependent more upon skill and less upon brute force.

The more or less permanent employment of professional coaches and trainers is believed to be not to the best interests of the Navy. The chief end and aim of such professional trainers is to produce winning teams, as upon this depends largely their reputation and occupation. It would appear that the Navy possesses those among the graduates who, with specially detailed medical officers, are capable of this duty, and the importance of the subject should justify the assignment of such officers for this purpose.

An examination of the reports on the physical condition of the four classes at the academy shows a marked gain in average weight and strength during the first year, a slight loss of average weight and a decided loss of strength during the subsequent years of training.

As this bears a constant relation to the decrease in compulsory exercise during these years as shown by the reports, it is evident that the mind is cultivated at the expense of the body in the case of the third, second, and first classes.

THE MEDICAL TIMES, fully aware of the importance of the points brought out by the Surgeon General, asked many medical men, occupying positions which make their word authoritative, to present their views on the subject.

The symposium following shows a diversity of opinion, but the general trend is along the lines of reform in the present method of conducting our school and college sports.

Several of the contributors to the symposium were athletes of note in their college days and most of them are specialists in physical education.

Dr. Sharpe was one of the most prominent men who ever represented Yale. He was a halfback on the football team, first baseman on the baseball team, center on the basketball team, a member of the gymnastic team and he also rowed on the freshman crew.

Dr. Brown was baseball captain at Johns Hopkins and also took part in other sports. Additional articles from well known athletic experts are in course of preparation and will appear in the March issue. We hope the ideas set forth in the subjoined contributions will arouse such a healthy discussion that an approved method of athletic training may eventually be devised.

SOME OBSERVATIONS ON MORTALITY AMONG YALE STUDENTS.*

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The question has been frequently asked in these days of the prominence of college sports: "Is the college athlete a sounder man in after years and a man of longer life than his non-athletic brother?" It is a generally accepted fact that some form of exercise or athletic sport is necessary for the proper development of the growing human body. Statistics prove beyond a doubt that the man in college, or out of it, is better for consistent exercise of some sort. But it is not so certain that the man whose enthusiasm for and proficiency in some sport brings him to the highest recognition in his college is correspondingly benefited. A good many people claim that the highly

developed athlete has more muscle and more lung power than he can use when he graduates and takes up his long apprenticeship in some sedentary occupation. If he is not careful the very power of lung and heart which made him a force in the long four-mile pull, if he be a crew man, becomes a danger to him, because there is no call in his everyday life for the abnormal development he acquired in college. If he does not keep up some pretty vigorous exercise outside of office hours the lung tissue developed in his college life falls into disuse and may be the indirect cause of consumption, or the heart, forced to do over-work in the strain of the competition in the big sports and over-developed, may retaliate in after life by refusing to do its work in some great stress like pneumonia, for instance.

At one time I made a study of the mortuary data collected by the Secretary of Yale University, my object being to ascertain whether the "Y" man in the four major sports was shorter or longer lived than the non-athlete.

The opinion prevails that the athlete dies before his less active classmate, that the predisposing cause is heart disease, and

*Dr. Anderson previously published some parts of this paper in a discussion on the longevity of Yale men.—Ed.

that the large insurance companies look upon these athletes as unsafe risks.

The data, which covered fifty years, were also examined by actuaries of insurance companies, who pronounced the athletes safer risks than the non-athletes. See the article by John M. Gaines, Yale '96, and Arthur Hunter, Secretary of the American Actuarial Society of New York, entitled "Mortality Among Athletes and Other Graduates of Yale."

I personally made further comparisons to determine expected deaths, and paralleled the Yale data with those of the Specialized Mortality Investigation of the Actuarial Society of America (Abridged Edition, average tables 69 and 70, page 478). See also comparisons of insurance years 1 to 30, page 474.

Still another comparison of the Yale data has been made with the American Table which has been the standard in law and practice for years (Reference, Mr. Rufus Weeks, Actuary of the New York Life Insurance Co.) The figures supplied by the Actuarial Society were based upon observations furnished by thirty-four of the largest insurance companies of America. In my paper, presented to the Society of Collegiate Directors, I also referred to Farr's Healthy English Male Table.

I also made comparisons between the members of the Scientific School and the Academic Department; the number of students in both sections from 1851 to 1905; the percentage of athletes in each class in both departments; the Academic and Scientific men living and dead by classes; athletes who died in college or four years after; dead athletes, cause of death, age, class and event.

A condensed table showing the number of deaths (58) among the Yale athletes who won the "Y" or its equivalent (808) with a distribution of these deaths among the football men, crew, etc. The period covered is fifty years, from 1855 to 1905, with the expected deaths and the ratio of actual to expected deaths based upon the tables prepared by insurance companies.

	Y. Men.	Deaths.	Expected Deaths by Actuarial Society's Select Table.	Ratio of Actual to Expected Deaths by Actuarial Society's Select Table.	Expected Deaths by American Table.	Ratio of Actual to Expected Deaths by American Table.	Year of Earliest Data.
Crew	171	18	40.2	45%	44.0	41%	1855
Football	213	16	27.7	58%	30.9	52%	1872
Track	276	13	21.1	62%	24.8	52%	1868
Baseball	148	11	23.6	47%	25.2	42%	1865
Total	808	58	112.6	52%	125.9	46%

YALE ATHLETES.

Cause of Death of 58 Men.

Consumption	12
Pneumonia	6
Typhoid	5
Typhoid Pneumonia	2
Drowned	4
Heart Failure	4
Unknown	5
Killed in war	1
Accident at baseball	1
Railway accident	1
Appendicitis	1
Operation for gall stone	1
Congestion of Liver	1
Embolism	1
Paresis	1
Bright's Disease	1
Scarlet Fever	1
Inflammation of Bowels	1
Diabetes	1
Cancer	1
Malignant pustule	1
Diphtheria	1
Gastritis	1
South American Fever	1
Suicide	2
Dissipation	1
Total	58

Deaths from heart disease in the Yale list of 58 men were four, at the ages of 35, 57, 68 and 70. The average is very low. Pneumonia carried off 6, typhoid 5 and typhoid pneumonia 2. Those who wish to push their argument that high athletics are bad for the lungs and heart might find some ground for that argument in the fact that 24 of the 58 deaths were caused by lung trouble of various kinds, and heart failure. The table of deaths further shows that 9 of the 58 athletes met violent deaths, of which 2 were suicides. One died of dissipation, which was not traceable to participation in athletics.

Comparison of the mortality of specialized athletes with the general graduate who has not distinguished himself in athletics to the extent of winning the Y still shows in favor of the athlete. Of 10,922 students in Academic and Sheffield classes from 1855 to 1905 inclusive 1,406 are dead and 9,516 living. The percentage of deaths here is 12.9 per cent. Of the 807 athletes from 1855 to 1905 only 58 are dead, a percentage of 7.2 or only a little over half of the general graduate. Of course the comparison here, as it was in the general mortality table, is somewhat misleading, in favor of the athlete, for it must be remembered he is a triply selected man, first by his membership in college; second, by his membership in the athletic group, and third as the pick of the athletic group.

The question arises, does the strain of athletics make itself felt during the time of the contest and for a few years immediately afterwards?

Yale athletes who died while in college:

Name.	Class.	F. B.	Crew.	B. B.	Track	Cause of Death.
C. W. C.	01				Tr	Pneumonia.
R. L. C.	92	F. B.				Typhoid.
G. E. D.	59		Cr			Drowned.
C. F.	72			B. B.		Drowned.
H. P. G.	928				Tr	Inflam. Bowels.
F. L. G.	75	F. B.				Accident at Baseball.
E. R.	908				Tr	Drowned.
D. T.	80d	F. B.	Cr		Tr	Drowned.
G. A. W.	90	F. B.				Typhoid.

Drowned, 4.
Typhoid, 2.
Pneumonia, 1.
Inflam. Bowels, 1.
Accident at baseball, 1. Total 9.
Football, 4.
Crew, 2.
Baseball, 1.
Track, 4. Total 11, less 2 counted twice.

Yale athletes who died within 4 years after graduation:

Name.	Class.	F. B.	Crew.	B. B.	Track	Cause of Death.
G. B. B.	88				Tr	Diphtheria.
T. B. B.	89	F. B.				Consumption.
H. A. C.	70			B. B.		Consumption.
T. C.	82				Tr	Scarlet Fever.
W. H.	90				Tr	Typhoid.
D. L. P.	94				Tr	Appendicitis.
S. B. R.	958				Tr	Consumption.

Consumption, 3.
Diphtheria, 1.
Scarlet Fever, 1.
Appendicitis, 1.
Typhoid, 1. Total 7.
Track, 5.
Football, 1.
Baseball, 1. Total 7.

After an examination of all material collected I present among other conclusions:

The Yale athlete does not die young nor is heart disease a leading cause of death.

Lung trouble is the cause of the greatest number of deaths, but the percentage of men dying from these causes is not greater than the expected deaths among non-athletes from similar causes.

A comparison of the causes of death among the athletes and those insured in the Mutual below 45 years does not develop any irregularities in the distribution of deaths.

The proportion of deaths among the athletes from tuberculosis was 22 per cent.; among the Mutual's insured below 45 years was 45 per cent.

Neither the paper of Gaines and Hunter nor my own show

that the athletes were long lived because they were athletes, but because, perhaps, they were selected men from applicants who were above the average; their longevity may have been due to training or it may not. To get a better test we should secure records of men of equal physical ability who did not take part in athletics, but this is impossible.

Had these selected men been injured while in athletics we might have proved something against it, but it does not follow that competitive sports were the cause of longevity, they may have actually harmed the men.

My conclusions showed that the athlete is not short lived, but I do not state that he owed his longevity to athletics.

I am particularly interested in anything that will be for the good of the Yale man. If athletics cause harm, then I hope to be found among the first to change them. If competitive sports coupled with the modern methods of training men cause heart disease, I want to know it, but I feel sure that the comparatively positive information that comes from an examination of these and similar data is of greater worth than the isolated and rather heated statements that often come from sources where exceptional conclusions are drawn from limited data.

THE RESULTS OF ATHLETICS ON COLLEGE STUDENTS.

DUDLEY A. SARGENT, A. M., S. D., M. D.

Director of Hemenway Gymnasium, Harvard University;
Medical Director, Sargent School for Physical Education,
Cambridge, Mass.

Cambridge, Mass.

The Surgeon General of the United States Navy, in his annual report for 1911, attributes the deaths and disabilities of a considerable number of naval officers to over-indulgence in athletics. The question naturally arises as to the results of athletics upon college students.

I have no hesitation in saying that, in my opinion, a considerable number of the students in our colleges who participate in athletics do injure themselves, but I should hardly attribute this injury to the same cause as the Surgeon General does. He says: "While football may be somewhat hazardous as played, it is the disabling after-effects that, in my opinion, make it questionable as a sport to be encouraged where future naval officers are trained. The prolonged, vigorous course of physical exercise necessary to excellence in physical sports is believed to be dangerous in its after-effects upon those who indulge in athletic sports sufficiently to excel therein."

The injuries that are received in the practice of athletics are due largely to accidents, and the vast majority of these may be attributed to the American game of football. These injuries are sprains, cuts, bruises, fractures and dislocations of various parts of the body and limbs, and concussion of the brain. The most numerous injuries are sprained ankles, bruised and dislocated shoulders, broken noses, synovitis of knee, dislocation of semilunar cartilage and concussions. How numerous these minor injuries from football are may be judged from the record kept by the two surgeons who looked after the Harvard players in 1905.*

In this report, it is stated that there were, during the season of eight weeks, 145 injuries among the University squad of 70 men, or an average of 2.07 injuries to a man. Most of these injuries are inherent in the very nature of the game. When eleven men on one side meet eleven men on the other—alternately making themselves battering rams and a wall of defense—it is reasonable to expect that some of them will be injured. The head guards, shoulder protectors, padded thigh guards and knee and ankle bands that are uniformly worn by football players indicate in a most realistic manner what is expected.

*"Football Injuries of the Harvard Squad for Three Years Under the Revised Rules," by Edward H. Nichols, M. D., and Frank L. Richardson, M. D., Boston, in the *Medical and Surgical Journal*, January 14, 1909.

It is quite generally conceded that most of the football injuries occur in what is termed "mass plays" and "piling up." In evidence of this, it may be noted that since the change in the rules and the introduction of the so-called "open game," the number of injuries has been reduced over 60 per cent. A badly wrenched knee or ankle, dislocated shoulder, injured spine or concussion of the brain may give trouble in later years, and, in some cases, lead to incapacity for one's life, but we seldom hear of such cases. The number of men permanently injured compared with the number permanently benefited by playing football is exceedingly small.

Excluding the injuries that result from accidents from contact with the ground and opposing players, which we have seen may be greatly reduced by changing the rules of the game, football is less injurious to the heart and system generally than are basketball, rowing and distance running. The reason for this is that football is played in spasms of activity, lasting but a few seconds each, and not aggregating more than ten minutes in an entire game, whereas the activity in the other forms of athletics mentioned is not only more or less strenuous but continuous from twenty to thirty minutes to one to two hours.

Not infrequently a man is put into the game of football at the eleventh hour, on account of the superior ability which he shows in practice, or to take the place of a disabled player on the regular team. These substitutes are not likely to be over-trained—indeed, some of us think they do not get training enough—yet they invariably last out in the game of football, a thing that they could not do in distance running or rowing.

Athletics have lost their original significance, and are no longer practiced as a preparation for war or as a training for the hunt or the chase. In the practical affairs of our present day life, a man is seldom called upon to jump 20 feet, or to run, row or swim a mile at top speed. Ability to do these athletic feats, however, does imply a superior physique and a certain amount of constitutional vigor. These are qualities of the possession of which any young man has reason to be proud. It is really in the effort to show their superior metal that our youth are induced to practice athletic stunts and take part in hazardous games. There would be little credit, glory or distinction in doing the commonplace things which every man without training should be able to do.

Here is one source of injury as is implied in the report of the surgeon general. Instead of making general gymnastics and athletics, including all the sports and games in their season, an integral part of the training of youth, our schools and colleges have, until quite recently, entirely ignored this important branch of education. As a consequence of this neglect, the larger portion of our college youth give little or no time to the practice of athletics, while a small minority have undoubtedly carried their athletics to excess. The whole affair has been managed from a spectacular instead of an educational point of view. The standards of excellence have become too high and artificial and way beyond the attainment of men who have anything else to do. This leads to the evils of professionalism, commercialism, and the over-strenuous efforts on the part of coaches and trainers, backed by graduates and undergraduates, and in some institutions by the faculty, to turn out winning teams.

Where the competition and rivalry are so intense, a student, in order to be successful, must not only do his best but even better than his best. It is from "pulling one's self out to the last link" in these athletic contests that injury to be felt in after life is likely to occur. This is what is continually taking place in the trials of those who are trying to make the teams with too little preparatory training. In all such contests, the weak and inefficient are weeded out in the process of selection. Those that survive must necessarily be strong and

enduring, and, under ordinary circumstances, would live longer than the average man.

The number of distinguished athletes who die from the infectious diseases, more particularly tuberculosis, pneumonia and typhoid, will always raise the question as to whether the prolonged strain to which they have frequently been subjected has not lessened in some measure their powers of resistance against disease. It is possible to overdo in athletics as in business, but that is no reason why we should do away with athletics any more than we should do away with the strenuous occupations.

The remedy that I would suggest, therefore, is not less athletics but more; less of the intensive, narrowly constructed and highly laborious forms of athletics, more of the diffusive, widely extended and much more enjoyable forms of sports and physical exercises.

Years ago, when many of our college students broke down in their health, in their effort to reach that ideal 100 per cent. or that third of a point more attained by their nearest rival, the faculties of some of our northern colleges established the method of marking by letters, A, B, C, D, etc., instead of by figures, letting A represent a standing between 90 and 100, B between 80 and 90, and so on. This solved the problem and greatly relieved the mental strain and tension.

Some such method is now necessary in order to relieve the competitive strain and tension in our various forms of athletics. The so-called group or class contests in athletics, which have been introduced into some of our schools and colleges, seem likely to help solve the problem. Some of the advantages of this method are: It gets all of the students into the contests instead of the favored few; it cultivates the coöperative and altruistic spirit, instead of the spirit of intense individualism; it improves the health and general efficiency of the whole student body, and does away with the evils of over-straining as well as over-training.

FOOT BALL SAFE FOR PHYSICALLY QUALIFIED MEN.

A. H. SHARPE, M. D.

School Physician and Football and Baseball Coach, William Penn Charter School; Assistant in the Nose, Throat and Eye Clinics, Philadelphia Polyclinic and Wills Eye Hospitals.

Philadelphia.

Regarding the good or evil that follows football and other sports my personal experience has been entirely in favor of such activities, as carried on at all well recognized universities and "prep" schools. That there is bound to be a difference of opinion upon this subject is only natural, as there is a difference of opinion on every debatable question extant and always will be as long as the world is as it is.

Football is the "goat" of all the sports. If a person has ever played football, no matter where or upon what team, and then has the misfortune to die, football is held responsible. If a player is killed in a railroad wreck; if he gets cut and blood poisoning sets in; if he dies of heart disease or acute indigestion; in other words if he dies during the football season, football did it. This can be verified by running over the files of any newspaper for the past football season or any other. Arguments are of no use against such accusations.

Of course football is dangerous and always will be as long as there is bodily contact, but, to those of us who have played the game, and therefore should have the best right to judge, it is not unnecessarily dangerous. On the contrary, we feel that if a man is built for it, it will do him good. We have had deaths in football where the men were physically fit and were well looked after, but they are so rare one can count them upon the fingers of one hand. If games were abolished on account of these unfortunate occurrences we should have no games at all, for practically every one of them shows a casualty list.

We may abolish football but we cannot abolish human nature, and therefore we must take into consideration the superabundant energy with which every healthy young man is endowed and turn this loose into a good channel or there is going to be trouble. Football is the best outlet we have for such lusty youths and certainly there is no other game which presents such attractions. These fellows demand something with a "tang" to it. They are aching to try themselves out, to see if they really have got good stuff in them as far as courage, strength and "sand" are concerned. This is the only game we have that demands the best a man has physically, and as we have plenty of other games suited to all ages and strengths, I can see no good reason why we should not have one limited to the strong.

Of all the athletes I have known none of them have had any after results, except good health, unless it was from some anatomical lesion, such as torn ligaments. How any organic lesion could be traced back and definitely assigned to that period in life when the person was actively engaged in athletics is beyond me. All our teaching has been that exercise is good for the human body. Now, if the exercise a man takes is not going to be shown to be injurious by the immediate results to the person actively engaged, how are we going to say he is over-indulging?

I mention this because the Surgeon General of the United States Navy is of the opinion that:

"While football may be somewhat hazardous as played, it is the disabling after-effects that make it questionable as a sport to be encouraged where future naval officers are trained. The prolonged, rigorous course of physical exercise necessary to excellence in physical sports is believed to be dangerous in its after-effects upon those who indulge in athletic sports sufficiently to excel therein."

Surely then one who has made his 'varsity football team has indulged sufficiently to excel and according to the above should show "dangerous after-results." My experience has been directly opposite to this and I believe that if the proper amount of time and money were spent upon this question the vast majority of 'varsity football players would show better health rather than "dangerous after-results."

A RADICAL CHANGE NEEDED.

W. L. ESTES, M. D.

Lecturer on Physiology and Hygiene and Consulting Physician, Lehigh University.

South Bethlehem, Pa.

I am not quite sure in what form you wish my opinion in regard to the effect of football and other prolonged, vigorous exercises for college students. I have been connected with Lehigh University for about twenty-eight years. I have had an opportunity to observe students while in training and have had occasion to see many of them after injuries in the various sports and I have therefore some definite ideas in regard to this matter.

I venture to give it as my opinion that, as ordinarily conducted in these modern times, both training for athletic sports and indulgence in the several athletic games are improperly conducted and conducive of grave evils. I cannot say that this is due so much to actual injuries as to the ulterior effects of over-exertion, especially on the part of boys who are undeveloped and whose training as a rule is too short and desultory to withstand the tremendous and sometimes prolonged efforts of the athletic contests.

The average age of the college boy is from 18 to 24 years. This period finds him with bones and muscles still in the developmental stage, he has still much undifferentiated tissue, and he still needs all of his possible metabolic vigor to meet the calls of natural growth. When he is called upon, as he is in football games, to enter a strenuous contest after a course of training which at most, as a rule, extends over but five or six weeks from the time he enters college in the fall until the football season begins, he is far from a condition of

proper preparation. Though he may have been in a measure prepared by his experience and some training at a preparatory school for this contest, he is never thoroughly seasoned, and he is called upon with this little training to endure the violent muscular exertion of a number of hours on the football field preparatory to the games, and then, with violent excitation of his nervous system, he enters a game which in his early experience means to him more than a Marathon. Both nervous and muscular systems are tuned up to the highest pitch and carried to a degree of absolute exhaustion before the game is over. He piles up in his system the products of muscular waste, which in many cases are not eliminated by his excretory organs by the time he is again called to the field, then the same round begins.

The effect of this in many instances I have found is a dilatation of the heart. In some instances it is so extensive or severe that it at once terminates the usefulness of the youngster as an athlete, and requires months for proper compensation. Granting, however, a sturdy enough young man and rapid reparative processes, the burdened heart sometimes compensates and the boy is able to continue the contests. There then begins a hypertrophy of the whole muscular system. This hypertrophy may be continued during his college life and, if his occupation afterwards requires an outdoor life of exercise, it may possibly be continued and confirmed. But if, as it frequently happens, the young man after he leaves college has not the opportunity to continue his training, the result is muscular degeneration and a condition which is very apt to lead to rapid degenerative changes in the heart muscle.

In regard to the injuries themselves, I have seen comparatively few that have incapacitated a young man for future activity. I know there are some serious ones. Of course, we all know that some of them produce death. In regard to future activity various inflammations and wrenchings of the knee joint have in a few cases resulted in permanent weakness of the affected joint and in a few instances there has been more or less permanent disability.

Systematic, regular and graduated exercise as a part of a course in college I believe is good. What I object to is the strenuous tests without proper training, and the necessity of a man continuing his muscular exercise after college life, if he has trained himself to the condition of an athlete. In short, the history of college athletes and our physiologic knowledge indicate that athletes should belong to a class, and that mental training and training for intellectual pursuits cannot go on simultaneously with excessive athletic training without injury to any young man.

It seems to me that it will be necessary to have two classes of students. One of those who are willing to make athletics a profession and will continue their muscular development after they leave college, and the other which will take up athletics simply as an aside and not indulge in prolonged contests, but simply develop their muscular systems coincident with their nervous growth.

Then, too, I believe that the feeding of college students for their athletic contests is improperly conducted. The excessive quantity of nitrogenous matter which is usually given to the student who is in training is very apt to provoke a uric acid diathesis, which in turn leads to rheumatism and gout later on. I think, therefore, that the system of athletics as now practised in our colleges is an improper one and one which ought to be modified, else it will lead almost inevitably to greater harm than good.

All this is entirely without consideration of the moral effect of intercollegiate contests. I think this element should also be considered in deciding the good and evil of the present system. Students are permitted to wager large sums on the games, the competition is so keen in most instances, and the desire to win the contest is so overpowering, as the boys go into the contest knowing the possibility of their friends and

their college losing their money, they have an exaggerated idea of the value of winning the game and they are induced to indulge, in a great many instances, in practices which are not only unfair but brutal. This engenders the spirit of winning no matter by what means, and destroys the nicer feeling of honor, and consideration for the rights and welfare of their opponents.

ATHLETICS A BENEFIT TO THE PARTICIPANT.

PAUL C. PHILLIPS, M. D.

Professor of Hygiene and Physical Education, Amherst College.

Amherst, Mass.

An intimate acquaintance of some thirty years with competitive athletics convinces me that as practiced to-day in our American colleges they are, in general, a physical benefit to the participant.

Some students are injured from excess in them, others because they were physically unfit at the start, and still another group because of disabling injuries, but the physical good to the others preponderates. The injury of a star athlete, who is in the public eye, makes so profound an impression on the mind that it outweighs the benefits to scores of his compeers. The investigation which Dr. Meylan, of Columbia, made a few years ago on Harvard oarsmen, and the more recent study of middle and long distance runners by Prof. Hammett, now of Northwestern University, showed conclusively that the large majority of these athletes, both from their own report, and in the case of the oarsmen, from a physical examination, were benefited physically and were in better physical condition than the average man many years after their graduation from college. The greatest benefits do not always, perhaps not generally, come to the greatest athletes, neither do they come in the contests themselves, but to the squad at large in the preliminary training and practice.

Everyone admits the benefits from inter-collegiate athletics might be, and some day will be, greater than at present. With the more careful elimination of the physically unfit, the closer and wiser supervision of the men in training, the reduction of the fierceness in competition and the modification of rules allowing unnecessary roughness, the injuries will be largely reduced. These ends, it seems to me, may be obtained without the abolition of inter-collegiate athletics. Then the beneficent results, not only hygienic, but ethical and social, from these "big-muscle activities" so necessary to young manhood will be more largely secured.

PHYSICAL DANGERS IN FOOTBALL AND OTHER SPORTS.

JAMES A. BARBITT, M. D.

Medical Director of Haverford College, Instructor in the University of Pennsylvania, Member of the National Collegiate Athletic Association.

Philadelphia.

Careful and painstaking investigation has been undertaken in recent years to determine the authenticity of the large fatality lists printed from time to time on account of collegiate football. In actual fact these have been simmered down to two or three positive deaths from the game. There is no doubt that the football mass of eight or ten years ago had reached a dangerous state, and abolition of tandem and other combination attacks, flying tackle and interference with the field catch, resulted from the popular agitation on the matter.

In the recent reports to the National Collegiate Athletic Conference, two or possibly three recorded cases were verified and the bulk of reports on the "seriously injured" list came from the hundreds of smaller and untrained teams representing clubs, high schools, business associations, city sectional organizations, etc. The percentage, considering the

thousands of students indulging in the game, is not higher than in many of the minor and secondary sports, nor as high as in automobilism, aeroplaning or even skating.

The question of long and arduous conditioning is indeed a serious one, and has brought about the limited schedules, abolition of the training table and its accompaniments, and, quite generally, the restriction of late summer preliminary work. Aside from this, it is but fair to consider the compensatory advantages, the higher morale of the student athletic body during the active season, avoidance of intoxicants and tobacco, the comradeship and discipline of the team squad, the increased respect for physical development in all its phases, such as nervous control, muscular coördination, endurance and actual physical courage. Expressed honestly, perhaps, the following will sum the matter up in proper perspective:

1. Football in its hygienic requirements definitely contributes to "improve" physical standard.
2. A long and arduous season of training undoubtedly does produce a tendency to nervous strain, cardiac hypertrophy and even fibrous development.
3. The more serious injuries occur in brain concussions, spinal injuries, cardiac strain and ligamentous involvement of the knee.
4. The wear and tear of the long season and extended practice for hours often favor the exhibition of organic systemic weakness (often unrecognized previously).
5. The growth of these dangers is rapidly modifying the vigorous training season.
6. The recent adoption of a more open game, with allowed substitution and periods of rest, changes in interference and protection in the neutral zones, is going far to remove the severe exhaustion to the player.
7. The term "Esprit du Corps," submission to command, self-denial, and self-control tend to develop better college men and better army and navy graduates.
8. The spirit of collegiate loyalty acts as most powerful stimulus to the general student body.
9. Granting that injuries are not greater nor more numerous in reality than in many other sports and that injurious after effects are likely to decrease under a more rational game, we cannot afford to lose its community influence.
10. Shall we not take a step backward in the national physical strength if we limit elements of physical hardihood and substitute more enervating types of recreation.

THE AGGREGATE AFTER EFFECTS GENERALLY GOOD.

DUDLEY B. REED, M. D.

Medical Examiner for Men, University of Chicago.
Chicago.

The following statements constitute merely an opinion and are not based on a systematic series of observations such as might make it of scientific value.

Indeed, I believe that the question is peculiarly difficult of demonstration, inasmuch as the only cases which come under medical observation are those in which the effects of athletic training have apparently been deleterious, owing to disease, "break-down," or early death. Even in such cases, the etiological significance of the athletic practice is not easy to estimate, although the newspapers, for purely journalistic reasons, give it prominence as a cause.

A moral parallel exists in the oft-heard remark that "preachers' sons are prone to wrong doing." It may be questioned if a larger number or percentage of preachers' sons go wrong than brewers' sons, but greater notoriety is given to the one class of cases.

Without doubt, a smaller percentage of athletes go wrong physically than of their non-athletic fellows, but this proves nothing, since the majority of the athletes come, in the first place, from among the strongest and healthiest.

Having thus cast doubt on the probability of proving the case, or even of having an intelligent opinion upon it, I will proceed to give an opinion.

As far as my own knowledge goes, there are some cases of almost certain bad after effects of athletic training, effects which, in general, appear in the circulatory system. I have in mind several cases of varicose veins and two marked cases of enlargement of the heart with partial insufficiency.

There are many more cases of benefit which seems to be permanent, cases of men whose health is much better, both immediately after and ten years after their college career, than it was before taking up athletics, although there are many cases where no lasting effects, either good or bad, are to be noticed.

In my experience, the injurious after-effects are more apt to be due to track, basket ball, or tennis, than to football or baseball. Of the two damaged hearts to which I have referred, one belongs to a man who was famous as a mile runner and the other to a tennis expert.

In general, I believe the aggregate after-effects to be good.

Three additional points seem to me to deserve mention in this connection:

First—A considerable number of the cases in which the results are bad are traceable to our laxity in permitting participation in the more violent games by men who are nervous, high-strung, and inclined to over-do in whatever they undertake.

Second—Others of the cases are due to what might be called "the habit of violent exercise." In later life men who have taken part in the more strenuous forms of exercise in college are apt to feel that they must continue that type of physical work in order to keep in condition, thus making it possible to see men of 40 competing in tournament tennis with men of 20, exposing themselves to a tremendous temptation toward over-exercise.

Third—I believe the problem of preparatory school athletics to be physically vastly more important than that of college athletics. In the examinations of freshmen who have participated in violent athletics in preparatory schools, it is coming to be almost the rule to find slightly enlarged, irritable, and over-acting hearts. I feel extremely doubtful of the advisability of permitting such sports as basketball among boys between the ages of 15 and 19, boys in whom the skeleton growth has exceeded the ability of the circulatory system to accommodate itself to excessive activity.

OUR SYSTEM OF PHYSICAL TRAINING WRONG.

J. A. GWATHMEY, M. D.,

Former Medical and Physical Director, Vanderbilt University; Anesthetist to the New York Skin and Cancer and the Columbus Hospitals, Etc.

New York.

Ten years ago for a number of years I was medical and physical director of Vanderbilt University. In this position I examined many thousands of men as to their heart and lungs and also made various physical measurements. From the experience gained I wish to say most emphatically that the physical training as indulged in by all of the colleges and universities of the United States is absolutely wrong. The method of selecting the strongest men and training them to the extent of their physical powers, often to the neglect of their studies, is not only an injustice to the athletes, but a greater injustice to the other men in the college who are not athletes and who are not urged to exercise. They are always solicited for funds, however, for the athletic association, these funds contributing usually to the unnecessary training of the athletes.

I do believe in football. Every class should be divided and every man in the college or university should be compelled to play, but only against their physical equals. Open air gym-

nasiums should be established and every student should indulge in some open air exercise, using the indoor gymnasium only in the most inclement weather. The same general principle should apply to rowing and other university sports. It is discreditable to our intelligence that rowing should be limited to only a few men in college and the selection made, as in football, of only the strongest and best. How much better it would be for Columbia and other universities instead of having four or eight men to represent the college in rowing, to have 400 men representing it! How much better from a spectacular standpoint it would be to have 1,000 men engaged in the 100-yard dash in relays of 50 or 100, instead of having a mere handful as the result of our efforts! The most discreditable feature connected with athletics is where the students and the faculty unite in retaining in the university some man pre-eminently qualified for athletics, who at the same time is mentally defective as shown by his examinations.

The gist of this opinion is this: That every man in the institution should be trained moderately instead of a few men who do not need the training being trained to the limit of their physical powers.

NO AFTER EFFECTS AMONG 1,100 MEN.

W. A. LAMBERT, M. D.,

Physical Director of the University of Virginia.
Charlottesville, Va.

I have been Medical Examiner here for 20 years for all sports, and while I have permitted some men to play who were suffering with derangement of the heart, in most cases they have been prohibited from indulging in the sports. In those cases where the permission has been granted, I have known none of them to be injured and some of them have shown improvement. This improvement I do not, however, attribute to football.

Concerning the Surgeon General's observations upon the after effects I am not in position to express a worthy opinion. I will say, however, that not a case of after development has come to my attention. I know of only two cases of cardiac derangement in athletes in this university and both of them are members of track teams—one a hurdler, and the other a quarter-mile runner. Neither of them played on the football team, although one of them did practice two seasons with the second team.

I may add that the total number of football players examined in my experience is about eleven hundred, many of whom I have followed after their leaving college.

NO OBSERVATION OF PERMANENT INJURIES.

MAURICE H. RICHARDSON, M. D.

Moseley Professor of Surgery, Harvard University; Surgeon-in-Chief, Massachusetts General Hospital.
Boston.

I have been in active surgical practice through the whole modern football period; and during these years of football, with its strenuous training, there has been, in other departments of athletics also, that "prolonged rigorous course of physical exercises necessary to excellence in physical sports" of which you speak.

I have had nothing to do surgically with these sports, though I served for several years upon the Athletic Committee of Harvard. I have seen, in different parts of New England, a few accidents to football players directly due to physical violence in football; but never were there any serious or permanent results. In my practice I have never seen any disabling after-effects of football or any other game whatever, nor have I known of any such.

My experience in surgery is extensive, but it does not include, as I say, any evil results from athletic sports.

I am inclined to think that, if any bad results follow modern athletic competitions, these evil results are due to other causes than "strenuous and prolonged efforts to put the body into a state of physical excellence."

OTHER FORMS OF EXERCISE PREFERABLE.

JOHN A. WYETH, M. D.,

President and Professor of Surgery, New York Polyclinic Medical School and Hospital, Etc.
New York.

I cannot approve of the game of football as played now in intercollegiate contests. It demands overtraining in preparation for the games and overtraining to play them. I personally know of a number of fine young fellows who have been seriously injured and their usefulness impaired by injuries received in pursuit of football.

I am strongly in favor of steady and vigorous physical exercise, and in my opinion it would be better in every way if our young men developed their muscles by working with the axe, hoe or other implements of helpfulness instead of wasting their time in strenuous play.

ATHLETICS HAVE DELETERIOUS EFFECT.

GEORGE G. ROSS, M. D.

Instructor in Surgery, University of Pennsylvania; Surgeon to the Germantown and Stetson Hospitals; Assistant Surgeon to the German and University Hospitals.
Philadelphia.

In reference to the statement of the Surgeon-General of the United States Navy as to the hazard incidental to college athletics, it is my belief that football, rowing and track athletics, especially long distance running, have a deleterious effect on the health of the average man who participates in them. There are several reasons for my opinion: First, the age of the participants; second, the serious injury to undeveloped organs, such as the heart, the great blood vessels, and the muscles, due to the excessive amount of exercise and strenuous course of training. The accidents of these sports are of secondary importance to the structural changes which result from overstraining in early youth. I most firmly believe in proper exercise for developing boys. It is not the exercise or the sport that lies at the bottom of the trouble. It is the abuse of the exercise due to the overpowering desire to excel. College athletics should be cultivated and regulated, not abolished.

ATHLETIC EXERCISE MUST BE CONTINUED.

LAWRASON BROWN, M. D.,

Resident Physician, Adirondack Cottage Sanitarium.
Saranac Lake, N. Y.

I have long felt that men who went into athletics in college and then gave them up for sedentary occupations, or who in leaving college, to study a profession, neglected to take a proper amount of exercise, were more prone to tuberculosis than other men. Possibly the change from outdoor to indoor work is the cause of this, but then I have always felt that the large pulmonary expansion which they develop during their athletics was a source of some danger to them when they went at once into a sedentary occupation. The captain of the baseball team in college who preceded me developed tuberculosis after taking up a sedentary occupation. I also developed it after I began to study medicine. I have seen a number of other athletes do the same thing, though I have also seen men show the initial symptoms in the midst of their athletics. I had under my care the captain of the Harvard freshman team and one of the players from the Princeton football team, both of whom were engaged in athletics at the time they developed the disease. They both made good recoveries. I would say that my impressions are that it is very dangerous for a man who has engaged in athletics to give up all forms of athletic exercise.

OBSERVATIONS AND DEDUCTIONS IN THE COURSE OF OCULAR EXAMINATIONS OF SCHOOL CHILDREN.

SAMUEL HORTON BROWN, M. D.,
Philadelphia.

During the past decade it has become quite the vogue to demand and encourage the routine ocular examination of children in schools, orphanages, homes, etc., with the doubtful idea that perhaps such examinations, alone, would relieve all the terrible disorders to which children of school age are subjected and liable. The lay public, which represents the ultimate consumer in other lines, has not received sufficient satisfaction from this extensive and expensive series of examinations and clamors for a change of some kind, and expresses this dissatisfaction by carelessness in carrying out of the advice given, and oftentimes refusing it in its entirety. This further encourages distrust on the part of other members of the laity and soon the entire project becomes unsatisfactory to its own promoters, who continue to carry it on, but scarcely from the high motives that formerly actuated it.

In the greater number of instances in the larger American cities the school children have been examined in one of two ways; either the teacher who has been taught how to take visions, is constantly on the alert for pupils with manifestly defective vision, and these pupils are promptly detained until the school physician inspects them, and the defectives are sent home to their parents with the suggestion that unless such defects are corrected the child will be denied school privileges. The workings of the school system are so perfect that if the child is detained at home, within twenty-four hours the truant officer connected with the Compulsory Education Bureau is around threatening dire consequences if the child is not sent to school. If for any reason the child is out for a week or more, if the red tape has not been properly unwound, he is just as likely as not to find his place forfeited, so crowded are the schools in the Eastern cities. If for any reason he fails to find a place and his parents find a job to keep him out of mischief, the law is again upon them if he is or looks to be under fourteen years of age.

The other method consists in a routine examination of all the school children by the school physician at the beginning of the school year. This should be the better plan, but it has some shortcomings. The school physician may be a young man who has been compelled to accept the position with its meager emoluments until something better turns up, or he may be one of those failures who crowd the cities and must needs accept such a position for the rest of his life. In the first instance the youthful enthusiasm promises great returns, but unfortunately the examiner is likely to tire before he has completed his inaugural examination of 1,200 or 1,500 pupils. Private work demands some of his time, election is drawing near, and the work so auspiciously begun is never completed in the same way. The remainder of the children are examined by the school teacher or the school nurse, if there be one.

In the second instance, the older man, being either unacquainted with or skeptical concerning the advances in ophthalmology and child culture, relegates a high degree myopic child to the nurses to see what they can do with him, while the other ocular defects which are obscured by a highly irritable ciliary muscle are ignored.

Examinations of this character are not expected to be followed with brilliant results. The children are referred to a hospital, dispensary, or a department of the municipality where a more detailed examination is given the child and glasses prescribed. The glasses vary in degree of inaccuracy according to whether the prescription comes from a hospital, dispensary or municipal department, reaching the acme of inaccuracy in the latter. This is detail work and cannot be carefully handled where the cases occur in such droves and where the examiners have so little interest in the work. A

slight proportion of these patients reach the ophthalmologist in his private office and these receive the care and attention the case demands.

It is unreasonable to hope that at a hospital or dispensary where the defective children are present in great numbers and where the chief and his assistants give their service gratuitously, the best service is to be procured continuously. The assistants to whom the refraction work is delegated are often young and inexperienced, or more often constantly changing, and still more often in a hurry to get away from the clinic to attend their private practice. Add to this the confusion of the children losing their cards or coming on the wrong day and the picture is complete. After a long and tedious examination it often appears that the parents are unable or unwilling to pay for glasses. The city, in many instances, will furnish glasses free but only after its politico-ophthalmologist has examined the child and prescribed. This makes for additional delay. If the parents are willing to pay a moderate price for the glasses they usually fall into the hands of opticians who do not understand fitting, and work otherwise of value is nullified.

In view of these several circumstances is it any wonder that the parents complain and refuse to aid the authorities, thereby making conditions much worse. This is particularly true of the middle class native born Americans. In the foreign quarters of the large cities the school nurses and medical inspectors' authority is more respected and the lay opposition is less manifest. The opposition that is present in the other sections takes a most ingenious character at times, but in all instances it is the child that ultimately suffers from this combination of circumstances.

Among the children in the foreign sections of the larger cities, whether born here or abroad, the prevalence of high errors of refraction is much greater than has hitherto been suspected. It is difficult to give figures, since in some schools more than half of the children, of varying ages, are wearing glasses, while in the especially defective schools nearly all are, but the general impression one gets in these districts is that vision on the whole is very defective. It is not intended to convey the idea that these are cases of myopia or nearsightedness incident to excessive close work under poor conditions, that have continued to progress. A great number of these cases are high degrees of simple astigmatism or mixed astigmatism, in reality congenital structural defects of the cornea. This condition is also frequently observed in the youngsters who require the attention of the Children's Aid Society, the Juvenile Court, and similar agencies.

A curious fact has been observed by more than one worker among these visually defective children, the inability to improve vision with lenses (even when the error of refraction has been accurately determined by repeated examinations and several kinds of tests) at first, but after wearing glasses six months or a year, examination will show an increase in visual acuity. These cases are frequently observed, but seldom has the original observer the opportunity to re-examine the patient at a remote period to determine the ultimate outcome. Such children are said to be "stupid" or are put down on the books as having that overworked condition, "mental astigmatism," and simple spherical lenses are prescribed with the hope that they will never come back.

Cases of this character are entitled to the best that ophthalmology can do for them. Being children, the possibilities following the persistence or on the other hand the elimination of such an encumbrance as faulty vision are enormous. Every child is entitled to a fair physical start in life, and if it is denied him by those in ignorance of conditions, that does not relieve from the responsibility others who possess this intelligence. A child's future may be readily altered by the failure of those in a position to properly perform their duty.

Dispensaries are pretty well attended, as every young physi-

cian knows to his detriment, this attendance is made up of all classes of people, and a host of minor conditions are treated that could be well attended by almost anyone holding a medical degree. The refraction cases are turned over to one of the younger assistants, and no matter how complicated the case, it is a rare occasion when the chief gives more than passing attention to these patients. In this way it happens that muscle-defects and imperfections in the muscle balance are overlooked. Centering and adjustment of the lenses are seldom taken into consideration. Occasionally one of the assistants having this work in charge shows a striking enthusiasm and determination to place his work on as high a plane as possible, but this is not the rule. Most of the men are in a hurry to get through and difficult cases get no more attention than the easy ones, so that in many instances the work is no better than could be obtained from an itinerant jeweler.

This scathing arraignment is made only with a hope that these conditions may be remedied, not by the public, but by the profession. The entire dispensary problem is in the hands of the physicians and can be readily remedied if the chiefs have the courage of their convictions. Such children as I have mentioned are in most instances of poor parentage, and for them to receive the attention they deserve a fee of \$25.00 would scarcely cover the service even in the office of a good ophthalmologist of modest fees, on account of the time necessary to make several detailed examinations. The \$5.00 refraction of which we hear so much, as a concession that the high class oculist occasionally makes, is not to be considered in this connection, as the five dollar cases are simple errors readily corrected and promptly discharged. These children could be readily taken care of in a hospital dispensary by the chief, and his assistants profit thereby, if the chief could bring himself to cut down the number of cases by eliminating the simple cases that occur in the persons of middle class wage-earning individuals. It is not only that they impose on the hospital but they deprive those who could obtain attention in no other way from receiving consideration.

The inflammatory diseases of the eye do not appear to be alarmingly prevalent, according to the examinations of the school children in Philadelphia, although the early spring shows a great number of cases of acute catarrhal conjunctivitis of a more or less infectious and contagious character. A few of these do not entirely disappear; the swimming pools open as school closes, and a second mild epidemic follows, but it is very infrequent for any serious consequences to result. The pain, distress and inconvenience are the most this disease produces, as long as the patients are under some such supervision as accompanies school attendance. When these children infect their homes and when their families are dirty and negligent, most serious complications may arise. Mixed infections may follow and sight may be lost.

Trachoma has been the source of considerable discussion throughout the larger cities on account of its prevalence and virulence, but in Philadelphia, thanks to the Trachoma Commission, the Department of Health, the Bureau of Municipal Research and the numerous independent workers, the disease seen in the schools is of a most attenuated chronic character, and the degree of its contagiousness questionable. New cases receive most prompt and vigorous treatment so that the contagious feature is reduced as much as possible. Careful diagnosis has had considerable to do with reducing trachoma in the public schools. It may be mentioned in passing that the disease does not seem to thrive upon native American born children as it does upon the foreign born, even when both live under the same surroundings.

The hygiene of the schoolroom together with the hygiene of the curriculum is beginning to attract the attention of educators, as it did about twenty years ago, and promises certain results. Just so long as education is to be received by children in large groups just so long will it be accompanied by all the

conditions that render large buildings, like theaters, churches, factories, halls, etc., undesirable for continued attendance. It is impossible to have every room with illumination from the north and east; the cubic feet of air space and the constant interchange of the air depend upon so many factors that it is next to impossible to obtain the same conditions in more than one or two rooms. In large schoolrooms, it is impossible to place all the nearsighted children or those wearing full hyperopic correction within good visual distance of the blackboard. No thinking person would expect this, but this is no barrier to such advice from the books on school hygiene. Children whose fusion center or those in whom the psycho-visual units are imperfectly developed obtain little or no consideration in the large classes so common in the larger cities. The small class or the system in vogue in small country schools is the better method of imparting instruction to young children.

Works upon ophthalmology direct certain kinds of desks and benches for schools and also suggest that the type should be heavy faced, printed with a good black ink upon unglazed paper. It is just possible that the reason the latter suggestions are not carried out is because in many instances they occur in books poorly printed upon glazed paper.

The impracticability of designing a universal or interchangeable desk for the school room is apparent. Regarding the type and the paper it would suggest itself that the fewer books the better it would be for the child. It is not so much the character of the individual pages that is doing the harm as the continuous application of the eyes when the range is not greater than 30 to 60 cm.

Another feature of public school life in the lower schools in the large cities is the long hours, or rather the long periods of continuous confinement to the same room. In the higher schools and private institutions the periods in the class room last from one-half hour to one hour, but in the lower schools the children have only the recess break in the morning and afternoon sessions.

It would seem advisable, in view of the neurotic temperament of the average city child, to have short periods with a change of class room and teacher. This gives the young child a change of air, slight exercise, relief from mental anxiety, if for any reason he or she does not get along with the teacher, and refreshes the youngster by the entire change of surroundings. A change in the seating is also advisable after each period. Children quarreling with each other seldom learn.

Some day, it is hoped, the educators will restore the alphabet to the primary curriculum, so that we may be able to standardize the visual acuity of the school children and not have to resort to illiterate tests to determine vision.

The conclusions that must necessarily be reached after surveying the field are obvious. The innumerable scientific investigations that have been undertaken in the past to determine the condition of school children have demonstrated beyond peradventure the facts of the situation. What is lacking, however, is improvement. The machinery that has been set in motion has failed to turn out the proper material. A higher degree of efficiency is demanded.

It would seem that the trouble is not with the principle involved but with the individual units of the organization. The practice of ophthalmology embraces considerable care and attention to minute details. This requires time and time has a monetary value. If the municipalities or other corporations desire to obtain the best results, the employees should be paid salaries that would make this service possible and eliminate political influence to obtain and retain the position when the work is inefficient. After a long period of this sort of thing Philadelphia has organized a corps of school inspectors and nurses that deserves commendation.

There is no reason why the children whose parents are well able to afford to pay for their ophthalmologic work should be crowded into free dispensary services, and the nurses and

inspectors should be allowed some discretion in determining this feature. Eventually all these children will be examined and corrected, but it scarcely seems just that they receive their attention gratuitously at the hands of the poorly-paid city ophthalmologist. The efficiency of the work is certain to be increased when adequate compensation is made for the services, but otherwise the second class work that is bound to be followed by mediocre results will reflect upon all concerned in it.

ALCOHOL IN THE TREATMENT OF PNEUMONIA.

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Within the memory of many physicians, the treatment of pneumonia without using some form of alcohol was reprehensible practice. Two years ago a prominent Bavarian physician who treated pneumonia and typhoid fever without alcohol was put on trial for malpractice. His accusers asserted that alcohol was a specific for the exhaustion of pneumonia and typhoid fever. Appeals to statistics showed a diminution of mortality in cases where alcohol was not used. Testimony was presented at great length, principally historic and personal, and finally the accused man was acquitted. Later he appealed to the profession in Germany and France, particularly hospital physicians, and the vast majority sustained him in his contention that alcohol was injurious, and the failure to use it was no lack of good judgment, but rather a personal matter depending on his experience and skill.

Since that time his contention has become a fixed conviction in the minds of many of the great clinicians, who have given up all use of spirits in exhaustive diseases. Many physicians still insist that some form of alcohol is essential in the successful treatment of pneumonia. Some begin its use at the onset of the disease, others only when the crisis comes on, and some use it in the convalescent stage. In all this, there are the same old theories that alcohol has some stimulant and tonic action on the organism and helps to sustain the heart, and also that it has a food value, essential in the convalescent stage.

Probably a large number of elderly physicians use alcohol for this and other reasons, but the evidence of its danger and perilous character is increasing with every exact study, and the facts are accumulating so rapidly, showing its direct injury, that the modern physician is open to considerable criticism who still insists on using it. One of the distinct clinical conclusions from hospital and private experience is that over seventy per cent. of all fatal cases of pneumonia have a distinct history of using alcohol in excess or so-called moderation.

Prof. Wright proved conclusively that the relative amount of opsonins in a given serum is an unmistakable indication of the defensive powers of the individual. Hence he established an opsonic index which was practically true for nearly all persons. The increase of the opsonic power and its diminution was simply a measurement of the capacity of the leucocytes to defeat bacterial invasion.

Dr. Chas. Stewart, of Battle Creek, experimented with a number of individuals to determine the opsonic power of the blood before and after the use of wine in small doses. He concluded as the result of very careful experiments that the tubercle bacillus was diminished to the extent of 37 per cent. and with the streptococcus the average fall was about 42 per cent. These conclusions were verified in a number of cases with about the same results.

In Emery's work on Immunity and Specific Therapy occurs the following: "The liability of alcoholic subjects to pneumonia and some other infectious diseases is well known and in them the prognosis is more than usually unfavorable. Alcohol is known to destroy certain delicate substances (complements

and opsonins) which play some part in the defense of the body against microbic invasions, but it is not known whether these effects are actually manifested in the circulating blood."

Prof. Laitinen, in the Norman Kerr Memorial Lecture, at London, England, in 1910, showed that these effects are actually apparent in the circulating blood, and can be measured with much precision. He showed that from two to three ounces of claret or Burgundy a day lowered the opsonic index, beyond all question. His experiments with the blood serum of 31 drinkers and 35 abstainers showed markedly the influence of alcohol on the hæmolytic power of the human blood, showing that it was weaker and less resisting. In another experiment with 27 drinkers and 27 abstainers, the resistive power of the human blood corpuscles was very greatly diminished against all sorts of bacterial invasions. In all, his experiments covered 95 individuals, carefully examined in four different series of tests and controls. In all there was a marked diminution in the hæmolysis, opsonic index and complement content of all persons who used spirits.

These experiments uniformly showed a diminution of leucocytes and the power of leucocytosis. Osler has confirmed this in a recent statement in which he says that "It has been known that habitual drunkards have a slim chance of recovery when attacked by pneumonia. The mortality is very much higher." Thus in a record of a thousand cases, compiled by a London insurance company, the mortality from pneumonia in total abstainers was only 18 per cent., in moderate drinkers 25 per cent., in excessive drinkers 52 per cent., showing that alcohol of all the substances known lowers the resistive power of bacteriolysis and of all substances known it is the most dangerous as a remedy for this disease.

During the last year, several new experiments have been made on the action of alcohol on the red blood corpuscles in both man and animals and the result has been uniformly the same, particularly on two organisms, the pneumococcus and tubercle bacillus. The International Congress on Tuberculosis recognized this fact and passed the following resolution: "That in view of the close connection between alcoholism and tuberculosis this Congress strongly emphasises the importance of combining the fight against tubercle with the struggle against alcoholism."

In all this there is a distinct recognition of the possible important part that alcohol plays in pneumonia that should be recognized, and in many cases it will be found to be the most important factor. Dr. Evans, of London, in a recent lecture on Alcohol and Its Relations to Diseases of a Bacterial Origin, brought out this very clearly.

In surgical practice, a history of the use of spirits always complicates the results and increases the fatality. In contused wounds and fractures recovery is more difficult and slower, and gangrene and other fatal complications are more rapid. In a history of a large number of persons who are inebriated and alcoholics death always follows from pneumonia, and it is considered that pneumonia is literally the terminal station; that the inebriate and the alcoholic, as a rule, die from two diseases, pneumonia, the most common, and cerebral hemorrhage. Of course Bright's disease and many other complications are always impending.

Many physicians when called to treat a drinking man, or one who has used spirits, are filled with fear that the sudden removal of alcohol will be followed by a shock or a depression of the nervous system that will seriously complicate the vitality of the patient. They reason, because a man has used spirits for a long time, that it is essential to give him spirits, particularly when the lungs become complicated. Practically, this is fatal reasoning.

The inebriate with pneumonia can never recover if spirits are continued. If he does, his case is an exception to the rule. He is suffering from toxæmia, in addition to the toxic products

of pneumonia and the paresis of the branches of the pneumogastric nerves. The first requisite is to remove all sources of irritation, and alcohol is the most dangerous and serious of these. Elimination through the skin and kidneys is the most important thing and will go farther towards relieving the local condition than any other means. Hot baths, hot packs, salines, fresh air and total rest of the stomach are remedies.

One of the great delusions that cling to the practice of medicine is that alcohol has some stimulant, tonic and food values. Acting on this delusion it enters into the treatment in many cases. Literally its effects are exactly opposite; they are anæsthetic, depressant and narcotic, and this is not a matter of opinion, but can be measured and proved by instruments of precision.

All persons who use spirits are below the normal level of health. Nutrition is impaired. Elimination is disturbed. This is also a matter of exact finding and beyond all opinions or even the feelings of the patients themselves. Alcohol in any form deranges the blood, its activity, the flow of vital forces, and the uniformity of metabolism. In addition to this toxins are introduced, which still farther depress and interfere with the normal health processes. The congestion of the capillaries seen in the face, and the irritation noted in the heart, rising and falling, and other conditions that are evidently abnormal, are unmistakable evidence of its anæsthetic action. As a remedy, it might quiet pain and diminish the sensitiveness of the nerve centers, but the risk of this by the introduction of other toxins makes it an exceedingly dangerous remedy. The suffocation and the labored breathing can be relieved by inhalations of chloroform, which is simply an anæsthetic, acting the same as alcohol, only concentrated. Experience shows that sudden deaths from pneumonia, occurring within a few hours from the onset of the disease, are due to a form of paresis, affecting the centers and terminals of the pneumogastric nerves.

This explains the sudden fatal termination of cases within 24 or 48 hours and is very common in persons who have drunk large quantities of spirits. Dr. Richardson, long ago, drew attention to this fact, and called it pneumono-paresis. Drinking persons found on the street in cold weather who develop pneumonia and die, are supposed to have what is called congestion, from the sudden change of temperature. Persons who are in the best of surroundings, who suddenly develop the same disease and die, are examples of such paresis and not of the sudden change of temperature. Where these conditions suddenly appear and the physician reasons that death will follow from depression of the heart, and uses alcohol as a stimulant, he is literally precipitating and increasing the very condition he is seeking to overcome.

Every dose of alcohol increases the heart beats at the expense of lowering them later, and the continuous use is a very heavy draft on the reserve power and vitality. In health, a dram of alcohol will raise the heart action from eight to ten beats a minute, and sometimes more, but in a short time depression sets in, and the diminished activity, lowering of the heart's action as far below the level as it was raised by spirits, gives some idea of the exhaustion and depression that come from this source.

The use of alcohol in pneumonia is simply covering up the pain signals and lowering the activity of the heart, and the opsonic index shows this. In addition to this, there is a vasomotor palsy which may be general or local and is recognizable in the flush of the face and the tension of the arteries. The change in the blood counts shows its effects on the metabolism, even in small doses. The dehydrating qualities of alcohol on protoplasm is another exact fact which can be measured and estimated. Now a remedy having this action cannot be helpful, but is poisonous in every sense of the word, particularly in lowering the vitality and diminishing the resisting powers of nature.

Pneumonia is a local disease, self-limited, and will naturally end in recovery. Alcohol as a remedy will complicate and retard this tendency. It will bring toxæmias and palsies that will still farther derange and check the tendency to recovery. The late Dr. Austin Flint related several cases of double pneumonia that recovered, without any remedies, except salines. They were placed in a tent and were exposed freely to the air. Experience shows that the mortality from pneumonia in the most modern hospitals with every appliance for nursing is greater than in persons treated in the open air, with nothing but eliminatives and salines. Very startling cases of recovery are often reported where the conditions seemed adverse, but in reality they were contributive, particularly in oxygen and absence of drugs that interfered with the circulation and vitality. The burning of a small hospital brought out this fact. Four cases of pneumonia about the same stage were removed. Two were taken to a dwelling house and two were placed on a porch. They all recovered about the same care. The two in the house died and those on the porch lived. This was attributed by the doctor to the perfect oxidization of the blood in the one case and deficiency in the other.

In my experience covering a great many years, I always advise the immediate removal of alcohol with the first signs of congestion in inebriates; where this is not followed fatal results are more prominent. The moderate drinker should be placed in the open air, whenever pneumonia comes on, and baths, both of salt and soda, hot packs, saline purges, if necessary, and little or no food, but abundance of water, either hot or cold, should be given. The central question is to eliminate the toxæmias and conserve the vital forces by removing every source of depression. Any form of spirits is dangerous, and the modern physician has no excuse for using it, no matter what his experience in the past has been. There are so many means and measures that are safe, and if not distinctly curable, do not complicate the progress of the case. A man of some wealth was taken down with pneumonia, and he insisted on being cared for by a country physician. His friends warned the physician that his case would be carefully scrutinized, and he would be responsible for any mistakes in the treatment. A trained nurse kept a careful record of the progress of the case. No spirits were given and very little food; fruits, acids, salines and baths constituted the treatment, and the man recovered. There can be no doubt that these represent the most rational means and measures, confirmed by science to-day.

The reckless use of spirits to combat symptoms of depression and lowered heart activity reflect on the skill of the physician. The still more reckless efforts to lower the heart activity by drugs should be condemned as seriously. Another equally reckless form of medication is hypernutrition, insisting that the patient should take all sorts of food at short intervals on the supposition that starvation is impending. Another delusion is fear of drafts and of intensifying the disease by permitting the air from without to come into the room and alter the temperature. These delusions have cost the lives of many persons and increased the mortality of what should have been curable cases.

I repeat the statement that there is no treatment of any promise in pneumonia occurring in inebriates and alcoholics. The mortality rates are so high as to show that recovery is the exception rather than the rule. The old-time physicians who used the lancet and large doses of calomel had far better results than the modern physician, with spirits and nutrients and a great variety of preparations whose effects are unknown.

Dr. John T. Bowen, professor of dermatology, and Dr. Frederick Cheever Shattuck, professor of clinical medicine in Harvard Medical School, will retire on Sept. 1, with the rank of emeritus, after many years' service.

The Medical Times

A MONTHLY JOURNAL

OF

Medicine, Surgery, and Collateral Sciences

ESTABLISHED IN 1872

EDITED BY

H. SHERIDAN BAKETEL, A.M., M.D.

Original articles and clinical communications will be welcomed, if given for exclusive use in this journal

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Definite written orders for THE MEDICAL TIMES are required from all subscribers, to whom the journal is thereafter regularly forwarded, until written notice to discontinue is sent to the publisher.

All communications should be addressed to and all checks made payable to the publishers,

MEDICAL TIMES CO.

ROMAINE PIERSON, President and Treasurer

H. SHERIDAN BAKETEL, Secretary

108 Fulton Street, - - - New York

Entered as second-class matter, Post Office at New York, N. Y., Act of Congress of March 3d, 1879.

NEW YORK, FEBRUARY, 1912.

CHEMOTHERAPY'S RELATION TO CANCER.

We are privileged to publish in the scientific section of this issue a translation of the complete paper of von Wassermann, relating to his chemotherapeutic experiments on cancerous animals, as presented to the German medical profession through the medium of the Medizinische Gesellschaft and the *Deutsche medizinische Wochenschrift*, 1911, XXXVII, 2389. The results of von Wassermann's experiments go to prove that Prof. Ehrlich has laid the foundations of a new principle in the form of chemotherapy, and we may well believe that through the efforts of these leaders in research there will soon be unfolded to us absolutely definite and exact methods for the prevention and cure of disease.

In this particular case von Wassermann elected to solve the problem of attack on tumor cells via the blood, and mice were chosen as the means. Discovering that salts of selenium and tellurium are taken up by tumor cells with which they may come in contact, von Wassermann and his associates sought means for the entrance of those salts into the living tumor cells of animals, for the purpose of noting the toxic effect. They injected a compound of selenium and eosin, which they perfected after making over 200 tests, and found that following the third dose of 2.5 mg. in a tumorous mouse weighing 15 gm. there was a distinct softening of the tumor. After the next injection the tumor became a cyst and a further injection caused a diminution in the size of the cyst and often brought about its disappearance. Generally seven or eight doses were necessary to be completely effective.

During the stage of absorption the mice frequently died and it was noted that if a perfect cure was not obtained, a recurrence speedily occurred. Four strains of carcinoma and one of sarcoma were experimented upon. Von Wassermann felt justified in stating that

the eosin-selenium compound, by disintegration of cells, brought about absorption and ultimate healing if the tumors were not too large in proportion to the size of the mouse. He is emphatic in his statement, however, that he has no evidence the compound will have a similar action on human cancers. While this may be true we are assured the investigators, having accomplished so much along these lines, will not stop short of discovery of a preparation that will prevent and cure cancers to which the human family is prone.

Again, American medicine must hail von Wassermann. His test for syphilis is now recognized throughout the medical world and his latest experiments bid fair to give added lustre to his name. Ehrlich and von Wassermann have placed all mankind in their debt.

THE STATUS OF PNEUMONIA.

While pneumonia is the most fatal of all acute infectious diseases, its treatment is still empirical. As a cause of death it stands second, exceeded only by tuberculosis. Strange as it may seem, the death rate in most infectious diseases has greatly decreased during the last twenty years. The death rate of tuberculosis has gone down 54.9 per 100,000; diphtheria, 52.5, and typhoid 12.5, but pneumonia goes on its deadly way unimpeded, killing in this country over 105,000 every year, or more than typhoid fever, cholera infantum, influenza, diphtheria, scarlet fever, septicemia and meningitis combined.

This condition is undoubtedly accounted for by the fact that pneumonia has not claimed that assiduous attention from medical scientists which has been given to other diseases. Very little has been added to Laennec's description of the morbid anatomy in 1819, and it was not until 1880 that the micrococcus lanceolatus was discovered by Surgeon-General George M. Sternberg, U. S. A. In 1884 Fraenkel noted that this organism was the most frequent cause of pneumonia, even though it produces other effects. If we are to believe Sir James Barr, one of the physicians to King Edward and a leader in English medical circles, little is being done in England to gain a knowledge of the disease, for he says (*Brit. Med. Jour.*): "The disease is short and inexpensive, so that no one makes much out of it except the undertakers, who grow fat on the misery of others. The case mortality is high, but yet no serious attempt has been made to curtail its incidence."

Sir James is become pessimistic with advancing years. Those of us who talked with him at the meeting of the British Medical Association in Toronto several years ago were impressed with his cheerfulness, but he has given vent to some discouraging statements of late, one of which anent the decadence of the British nation, was editorially commented on in the January issue of the MEDICAL TIMES.

If England is neglecting pneumonia, America and Germany are awakening to the importance of coping with this death-dealing disease, and a great deal of work is under way in the laboratories and hospitals of the two countries. We have learned, for example, that most people harbor the pneumococcus some of the time and some of the people all the time. But our knowledge appears to stop there, so far as the change in the infective agent is concerned. We are aware that outside of the pneumococcus, which Darling found present in the accessory nasal sinuses in 92 per cent of post-mortems on pneumonia-killed patients, there are other factors to be considered, such as a cold, whooping cough, influenza or predisposition, like improper hygienic conditions or the improper use of alcohol. Rose-

now suggests (*J. A. M. A.*) that anaphylaxis may account for pneumonic symptoms, but so far as actual facts are concerned, our knowledge of the onset of pneumonia, says Strouse (*Interstate Med. Jour.*), "must be embraced in the hypothesis that either the pneumococcus becomes more virulent or that something happens to the host to permit the entry of the coccus into the body."

We have reason to expect valued results from the investigation now under way as to how the body protects itself against the invasion of offending bacteria. Neufeld of Berlin seemed to have demonstrated the immunity offered by opsonins in pneumonia, but Strouse, Seligman and Boettcher disagreed with him regarding the presence of opsonins. Schneider (*Cent. f. Bakt.*) found bodies in the leucocytes which assisted in resistance during pneumonia, but Strouse adds that "the complete studies on the many other properties possessed by leucocytes—both so-called immune bodies and ferments, and the likely supposition that they possess many other properties still unknown, render unjustifiable any reasoning making leucocytosis and phagocytosis equivalents."

Attention is being paid to the chemistry of immunity of pneumonia, and J. R. Mitchell (*Med. Rec.*) advances the theory that calcium starvation is the cause of symptoms of the disease. He says every aspect of pneumonia shows calcium's value. According to Mitchell we know the pneumococcus extracts calcium from the medium in which it grows, that it extracts calcium from the human culture medium, that convulsions are caused by calcium poverty, and he feels that this poverty is the cause of convulsions in pneumonia. He further states that superacidity is a chemical invitation for alkalis and that calcium is the chosen guest in pneumonia. Calcium is required for the activation of lysins and opsonins and all the phenomena of leucocytosis, and gray hepatization is impossible without the presence of calcium. Therefore, Mitchell says the logical treatment of pneumonia is calcium, plus rest and support.

Blood pressure is an important factor, although authorities differ. Lambert (*J. A. M. A.*) says "the reports on the blood pressure in pneumonia vary so greatly that there must have been heretofore great divergence in instruments used or an insufficient number of observations to enable any one to gather together into a connected whole the observations that have been made. Some observers class pneumonia as a disease with normal pressure, others as one of hypertension, and still others as one with abnormally low pressure. Giglioli reports some fifty cases measured with the Riva-Rocci instrument, and states that in favorable cases the changes in pressure were slight. In severe cases the fall at the height of the disease on the fourth or fifth day was down to 80 or 90 mm. of pressure. In fatal cases rapid fall of pressure with dilatation of the heart are recorded. Others have found that a slight hypertension occurred during the first day or so, that in serious cases there was the rapid fall, the practically normal run of pressure in favorable cases, and that in favorable cases the pressure slowly returned to normal in convalescence. A drop down to 90 mm. of mercury has been considered of serious import."

Blood pressure is a little below normal in pneumonia, says G. A. Gibson (*Edinburgh Med. Jour.*), but there are variations during the progress of the disease. His experience leads him to make the following observation:

"When the arterial pressure expressed in millimeters of mercury does not fall below the pulse rate expressed in beats per minute, the fact may be taken as of excel-

lent augury, while the converse is equally true. That is, when the pulse rate per minute is higher than the pressure of the millimeters of mercury, the equilibrium of the circulation is seriously disturbed."

Treatment is far from being specific. A protective serum should meet every necessity, but results seem somewhat unsatisfactory. Roemer's immune serum does not appear to qualify, as some reports are good and some unfavorable. The employment of vaccine therapy in a report by Stoner showed 135 recoveries in 155 cases treated, but the number is too small to allow definite statements of real worth to be made. Rose now is experimenting along different lines. After showing that suspension of virulent pneumococci in salt solution rendered virulent organisms avirulent, he discovered that the bodies of the bacteria so treated when used as a vaccine were very beneficial. His observations will undoubtedly prove of great practical value.

The hope of the future in the treatment of pneumonia lies in vaccination. Meanwhile the physician, bearing in mind the fact that every case presents individual conditions which call for special study, must content himself with the usual routine symptomatic treatment, guarding especially against cardiac embarrassment and meeting every necessity as it arises.

THE REMUNERATION OF SHIP SURGEONS.

That ship surgeons are notoriously underpaid is a fact well known to those who have had occasion to inform themselves on the subject. The steamship companies demand highly qualified medical men to minister to the needs of passengers and crew, but forget that "the laborer is worthy of his hire." Not only must a medical officer possess professional ability, but many lines expect him to be a social mentor as well; and all this for \$50 a month, expensive uniforms not included. While we entirely disapprove of any sentiment which would appear like an endorsement of a man in measuring the extent of his services to his employer by the amount of his compensation, we must admit that the person distinctly underpaid is extremely likely to easily slide over unpleasant duties. The ship surgeon, for instance, is scarcely apt to make as careful an examination of immigrants boarding his ship as one of the better paid marine surgeons at the port of entry. He doubtless will not consciously neglect his duty, but the work may seem less necessary to him.

On account of the small salary medical work at sea is unattractive to physicians, except to those young men just out of the hospital, who have a desire to see a little of the world before settling down to practice. This fact was brought out at the meeting of the Canadian Public Health Association in Montreal in December. Dr. J. D. Pagé, of Quebec, read a paper on "Medical Inspection and Care of Immigrants on Shipboard," in which he emphasized the necessity for a more efficient examination by ship surgeons of immigrants to Canada. He said that while the duty of examining the newcomers devolved upon the medical officers of the ships, they frequently failed to live up to their obligations and that the two or three thousand people who arrive in Quebec from abroad each year have to be carefully examined by the medical inspectors of the port.

If this is true of Quebec it may also have a bearing on other and greater seaports. During the fiscal year ending June 30, 1911, 749,642 immigrants entered this country through the port of New York. Of these 16,910 were physical or mental defects, according to the Marine Hospital surgeons at Ellis Island, and 5,296 were deported. Among 209 found mentally defective were

10 epileptics, 11 idiots, 24 imbeciles, 70 insane and 94 feeble minded. There were also 1,167 cases of trachoma, among 1,361 cases of contagious diseases reported.

It probably was not the fault of careless ship surgeons that this great body of undesirable persons were brought to this country, but it would seem that more careful inspection on the other side would have prevented many from being accepted as passengers. From a medical viewpoint this influx is fraught with danger to the public, as is evidenced by P. A. Surgeon H. M. Manning, U. S. P. H. and M. H. Service (*Med. Rec.*, Sept 30, 1911), who found in 412 unselected patients in the Immigration Hospital, Ellis Island, over 40 per cent. infected with intestinal parasites, and over 24 per cent. showed the presence of the hook worm. Enormous amounts of money are being spent in the United States to get rid of this parasite, while at our very gateway it is pouring into the country via the anatomies of immigrants.

Where can the blame be properly placed?

Dr. Page is of the opinion that while the main reason for this shirking of responsibility is that the surgeons are young men, who accept the berth merely for a change without serious regard to the duties of the position, the real fault lies in the fact that the surgeons are underpaid. He censures the steamship companies, but says his suggestions to ship owners to more fairly remunerate the surgeons have met with the reply that as long as the supply exceeds the demand there is no necessity for a salary increase.

We can appreciate the attitude of the companies, but from the standpoint of work well done their position is untenable. Not only are the surgeons limited to a pittance of \$50 a month, but on most transatlantic lines they are not allowed to charge passengers for services, except in cases where the illness or injury developed before the patient came aboard the ship. Such a custom is absurd in the extreme. If a passenger visits the barber shop he pays the barber for any work performed. He also pays a fixed charge to the manicurist, the stenographer and to every one else who is on the vessel in a capacity of similar nature.

On the other hand, a man can fall down companion-way stairs and fracture a bone, he can contract pneumonia or he can suffer an attack of appendicitis and his only duty on leaving the ship, if he is able to talk, is to thank the surgeon for his kindness.

Why should a man not pay his physician at sea as well as ashore?

If the lines throw in free medical and surgical attendance why not the free services of the barber, manicurist, stenographer, et cetera, on the vessel?

If the owners in common justice cannot properly remunerate the surgeons should not the government interfere and insist that the medical officers of all ships arriving at American ports be of such calibre and possess such qualifications as to enable them to reject diseased applicants for passage and thus assist the Public Health and Marine Hospital service in preventing the entrance of those whose presence is a menace to society?

The annual reports of Commissioner of Immigration Williams and his chief medical officer, Surgeon G. W. Stoner, U. S. P. H. & M. H. service, furnish ample food for reflection.

With this knowledge in mind and with the prospect of the inauguration of many new American steamship lines in view of the forthcoming completion of the Panama Canal and the employment of many American physicians as ship surgeons, the question assumes important proportions. We believe a committee from the

American Medical Association, delegated with the proper authority, could take up this matter with the different companies signing American surgeons and eventually gain for them compensation in keeping with their duties and their high calling.

STRENGTH IN UNION.

"I can accomplish much if I but have the assistance of my fellows," wrote one of the early reformers, who sought to direct the attention of the people toward a more rational life. The herculean task for the individual becomes child's play when the work is divided among many. A medical journal to be of value must reflect the views of many. Few indeed are the men who unassisted can issue a publication which will meet the requirements of any considerable part of the profession.

Firmly believing that the readers of the *MEDICAL TIMES* desire the medical knowledge which can only be imparted by many minds, we have invited some of the best known physicians in the country to take positions on a Board of Contributing Editors. The gentlemen who have signified their intention of accepting are thoroughly qualified by education, experience and editorial ability to contribute material of a clinical and general nature which will be of distinct value to medical readers. Each editor will do his part toward making the *TIMES* a conservatively aggressive publication, and we have no hesitancy in predicting that the articles they furnish will be valued additions to medical literature.

The Contributing Editors are:

Dr. W. G. Anderson, of New Haven, Conn., Professor and Director of the gymnasium at Yale and one of the best known specialists in physical education in this country.

Dr. James A. Babbitt, of Philadelphia, medical director of Haverford College, an instructor in the University of Pennsylvania and a member of several hospital staffs as laryngologist.

Dr. Seth Scott Bishop, of Chicago, late Honorary President of the Faculty and Professor of Diseases of the Ear, Nose and Throat in the Illinois Medical College; professor of the same in the medical department of Loyola University and in the Post-Graduate Medical College.

Dr. T. D. Crothers, of Hartford, Conn., Superintendent of Walnut Lodge Hospital, Hartford; dean of the College of Physicians and Surgeons, Boston, and the most prominent man in the cause of temperance in the medical profession.

Dr. Oscar Dowling, of Shreveport, La., President of the Louisiana State Board of Health, and a leader among the hygienists of the country.

Dr. Kennon Dunham, of Cincinnati, whose work in the science of the X-ray has given him widespread recognition.

Dr. W. L. Estes, of South Bethlehem, Pa., for 28 years consulting physician to, and lecturer in Lehigh University and physician in charge of St. Luke's Hospital.

Dr. Frank D. Gray, of Jersey City, N. J., surgeon to Christ Hospital and the City Hospital of Jersey City and prominent in the Medical Society of New Jersey and other professional organizations.

Alfred K. Hills, M. D., of New York, consulting physician to the Metropolitan Hospital and for many years the honored editor of the *MEDICAL TIMES*.

Dr. Nathan Jenks, of Detroit, Mich., Adjunct Professor of Obstetrics and Clinical Midwifery in the

Detroit College of Medicine; Visiting Obstetrician to the Woman's Hospital and Infant's Home, and Visiting Obstetrician to the Providence Hospital.

Dr. Howard Lilienthal, of New York, Visiting Surgeon to Bellevue and Mt. Sinai hospitals; Consulting Surgeon to Har Moriah and the Jewish Maternity Hospitals, and to the Hospital for Deformities and Joint Diseases.

Dr. Stephen H. Lutz, of Brooklyn, Surgeon to the Brooklyn Eye and Ear Hospital; Aural Surgeon to the Eastern District Hospital; Consulting Surgeon to the Bedford and Jamaica Hospitals.

Dr. Robert T. Morris, of New York, Professor of Surgery in the New York Post-Graduate Medical School and Visiting Surgeon to the Post-Graduate Hospital.

Dr. George Thomas Palmer, of Springfield, Ill., a pediatrician who has made a reputation as a medical writer and poet.

Dr. John Punton, of Kansas City, Mo., ex-President and Professor of Nervous and Mental Diseases in the University Medical College; Consulting Neurologist to Kansas City General Hospital; member of the American Neurological and American Psychological associations, etc.

Dr. Irving W. Rand, of Fort Hancock, N. J., a major in the Medical Corps of the United States Army and a keen observer of medical affairs in the United States and the Philippines.

Dr. Chas. S. Rockhill, of Cincinnati, O., the presiding official of the Cincinnati Tubercular Sanitarium and a member of the faculty of the medical department of the University of Cincinnati.

Dr. George G. Ross, of Philadelphia, Instructor in Surgery, University of Pennsylvania, Surgeon to the Germantown and Stetson hospitals, Assistant Surgeon to the German and University hospitals.

Dr. Dunbar Roy, of Atlanta, Ga., Professor of Otolaryngology in the College of Physicians and Surgeons and chairman of the Section on Laryngology, Otolaryngology and Rhinology of the American Medical Association, 1910-1911.

Dr. Dudley A. Sargent, of Cambridge, Mass., Director of Hemenway Gymnasium, Harvard University and of the Sargent School of Physical Education and one of the first physicians in America to make physical education part of a college curriculum.

Dr. Albert H. Sharpe, of Philadelphia, School Physician to William Penn Charter School and an ophthalmologist on the staff of different hospitals.

Dr. John P. Sprague, of Chicago, formerly instructor in Clinical Neurology in Northwestern University Medical School and editor of *The Centaur*, the official journal of Alpha Kappa Kappa Medical Fraternity.

Diagnostic Value of Lateral Thoracic Glands.

Dr. M. M. Manges, of New York, is impressed with the value of enlarged lateral thoracic glands as a diagnostic measure in such conditions as tuberculosis and cancer (*N. Y. Med. Jour.*). In two of six cases of intrathoracic neoplasms in which these glands were enlarged, microscopic examination of the gland revealed cancer. In preliminary tuberculosis they are frequently enlarged, but in only one case was a tuberculosis demonstrated by pathological examination. Manges believes that enlarged glands in this situation manifest themselves occasionally before obvious signs of pulmonary tuberculosis are manifest, and their presence in the course of a routine examination should lead to a careful examination of the lungs. To be indicative of tuberculosis, the glands must be hard, rounded and distinctly palpable.

THE EDITORS' TABLE IN JANUARY

Among the myriad folders, journals, leaflets and magazines devoted to medicine, those circulating as organs of or announcements of the special Boards of Health present matter of noteworthy importance. Written by men who are on the firing line and doing things, these leaflets offer us at once a view of the workings of affairs in the field and a glimpse of the feelings of those who stand beyond the security of a private life and the quiet of laboratory research.

In *Florida Health Notes*, the official organ of the State Board, a journal edited by Dr. Joseph Y. Porter, we find a word as to catching flies. R. I. Smith, the active entomologist of North Carolina, writing in the *North Carolina Bulletin* of the Board of Health of that State, advises making a clouded solution. He says that equal parts of water and milk, to which formalin is added, is highly useful. We know that soapy or opaque solutions seem to invite a fly to sit down, and Mr. Smith has caught in six plates, one day about 40,000 flies. He says that one ounce of formalin to sixteen of the water and milk solution is a sufficient mixture.

The Florida Board found small-pox rampant in an east coast village. The inspector went over the situation thoroughly, and refused to place any "guard" over the cases. He gave instructions as to vaccination. He supplied the local practitioner with points and offered to vaccinate any who desired him to do so. Taking the stand that quarantine is totally unneeded in the prevention of this scourge, the health authorities have gone forward a long way. We feel that this decision is notable.

On the front page of the December issue, this *Bulletin* quotes John Burroughs:

One ship drives east and another west,
While the selfsame breezes blow;
It's the set of the sails, and not the gales,
That bids them where to go!

The editor, we suppose, is thinking of the objective that we must keep clear in our mind's eye, as we attend to our work, regarding the goals of science, and regardless of all else. He gives repetition to the *New York Times'* quotation of Dr. Polk and of Dr. Flexner, the latter saying that the recognition of cases of cholera is to be supplemented by a scrutiny for any possible "carriers" which as more insidiously dangerous are more to be feared, and the former impressing us with the foolishness of "fumigation" as a weapon against the spread of cholera. In Florida this question clearly shows that much of the fight continues to be acute. Lay and professional journals must emphasize in season and out the mode of extension and prevention of epidemics.

The *Bulletin of the Maine Board of Health*, another cogent pleader for united effort on our part, says in its November issue that open-air schools are proved to increase the weight of children beyond the range which their period of growth might attain. Open-air schools have long been one of our hobbies. We remember reading a plea for more judgment in selecting school hours. It does not seem reasonable to immure living, growing young creatures during the finest hours of the day's sunshine. To them, the Spring means "hookey" and justly! For us to say that they owe themselves or us a duty in attending school from nine ante meridian to three or four post meridian, is to say that we accept the correlative of ill-health which not illogically supervenes. Why could school not spare the hours from eleven to two to out-door study or play? Many factors govern the impossibility of this outcome. The school day would be lengthened if this sunny time were included in its regime. The teacher would have longer hours. The parents would have more expense, or, if the child came home for the noon intermission, the annoyance of having Johnny or Agnes at home and in the way of work. In all this the child, however,

is not paying. But children are non-supporting, at best, and so the additional difficulties are real and insurmountable (?).

The Maine *Bulletin* continues with a picture of the common drinking cup—a skull. It shows a diagram of a seven-inch square of paper which may be folded to give a usable cup.

The Manila Medical Society issues a live *Bulletin*—Dr. Musgrave editing it—and in recent numbers the questions of tropical and army medicine are attacked.

The *Bulletin of the Board of Health of the State of New York* shows that 41 pamphlets are now being sent out to professional and lay citizens. There is a special course of seven days' instruction for the benefit of the health officials throughout the state, as they may need or request information upon newer laboratory or technical procedures.

In a recent meeting in New York City, Dr. Prince A. Morrow, replying to Dr. Biggs, said that California now requires notification of gonorrhea and syphilis. This leads us to a thought: If these are due to an infection, no moral lapse is the occasion of the illness, and consequently, although there is the revelation of the possibility of such a lapse, there is no scientific ground for any such accusation. On the contrary, all the security of the race points to the need of removing this imputation of wrong, in order that we may seize upon and prevent the spread of such cases. A more powerful way also suggests itself in the idea of a statute giving cause for civil action in the event of the transmission of any venereal disease. Indeed, good ground for civil suit for injury could lie in the event of the transmission of any communicable ailment, when the transmission may be shown to be due to heedlessness or negligence. (Are these ideas of the future?)

Theodore Horton, speaking upon the pollution of rivers, said that not more legislation, but more effective modes of legal procedure, are needed.

Director Simon Flexner shows that in cases of cerebrospinal meningitis, treated within the first three days the mortality of 70-90% is reduced to about 10%. We connote the writing of Dopter, in Paris, who says that serum treatment is often unsuccessful, and owing to the presence of the parameningococcus (Dopteri).

Dr. Park suggests that the routine of the civic laboratory often comes up against the problem of improperly collected specimens. This militates against the accuracy and effectiveness of any technic.

Dr. Magill, of the State laboratory, deplores the condition of a high percentage of deaths from diphtheria (the rate is now 16 to 100,000, while in Paris it is 3 to 100,000). But Magill adds that the death rate among cases treated by the state serum is now only 8 in 100,000. Too small doses are employed, he fears, and says that 24,000 may be indicated in severe cases.

Dr. Scott Towne has controlled tetanus by the use of state vaccine under the direction of Dr. Magill.

The city, directed by the studies of Dr. Lederle, proposes to grade milk, A, B, C. This will enable the dealer and buyer to choose safely according to requirement.

Passing from these bulletins to the heavy ordinance, or major publications, we find the *Medical Record* taking up the subject of flat-foot, as it is met in the Navy. The editor states its occurrence is given as the cause next to tuberculosis of frequency of retirement for invaliding. That either tuberculosis or flat-foot should be common in the Navy surprises us. Open air, good food, no excessive labor, and supervision of the most scientific sort—these should not conduce to a high tuberculosis exhibit. And flat-foot should, it seems, be noted on or before entry. At the primary enlistment if no flat-foot exists why does it crop out later?

The *Medical Record* adds its word of friendly commendation of the efforts of the veteran editor, George B. Shattuck, of the *Boston Medical and Surgical Journal*, whose incumbency beginning in 1881 now terminates by his withdrawal to a well-earned rest. The *MEDICAL TIMES* takes occa-

sion to adjoin its regret that the time of participating in the pleasure and profit of following his writings must end.

The *New York State Journal of Medicine* for December, 1911, reviews the efforts of the state society to determine whether a nurse may administer anesthetics. In a leading editorial it gives voice to the opinion of James Taylor Lewis, who says that this procedure on the part of a nurse lacking a diploma in medicine and a license to practice would render her liable under the act regulating the practice of medicine and surgery in the State of New York. In an article by Woolsey, in the December issue also, this position is reinforced. The *New York Medical Journal* of January 6 comes out against a nurse's right or even ability to anesthetize.

The action of "salutary emotions" occupies the editorial mind in the issue of January 13 of the *Medical Record*. The experiences of army surgeons go to show that a beaten army is more susceptible to infection. And the converse. In the *New York Medical Journal* of January 13 the signed editorial of Reid Hunt, to the effect that emotion increases the secretion of the suprarenals will be connoted. Is there some change in the amount or action of epinephrin? And if so, does there seem to be any provable relation to opsonin formation? Cannon, in the *American Journal of Physiology*, April and December, 1911, says that together with this emotional relation there is some increase of suprarenal secretion in asphyxia, and he is discussed by Hunt as interpreting the glycosuria of emotion.

The *Boston Medical and Surgical Journal* gives space to a review of Henley's hospital verses. It does not seem good art, to us, to select chloroform and the vicissitudes of operation as subjects for epic, or even lyric utterance. In one way this might be good art. But in the last analysis, the dangers incident to gaining or regaining health are commonplace. A child takes its leap into the dark with so much nonchalance, so ready a *sang froid*, that a man ought to outdo it. Aside from this and not because operations may seem to the medical mind a taste of the ordinary, the nobility of recourse is embarrassed by the sinistral of hope of gain for oneself—of health, of freedom from pain, of prolonged life. There is not for the author-patient the light of renunciation, except of complaint. The verses are clear and beautiful. The epic glory of chloroform and of the place wherein it reigns, may lie in another province of experience, namely, in the beauty of perfect order and symmetry and command. These work together for good. Those who submit to their domination are chosen to do good and hold the firing-line of preservation of the species. Henley did not err in literary taste, if he did possibly incline to false sentiment. The editor of the *Boston Medical and Surgical Journal* deserves thanks, nevertheless, for his reference to a fair garden.

The *Journal of the American Medical Association* for January 13 stirs up the dust over the nature of complement. It was Buchner in 1893 who first showed that alexin or the bactericidal power was inhibited by dialysis, or by dilution with distilled water. What this means is significant. For some question of surface tension is evidently raised, if not posited. The *Journal*, however, does not consider this, but goes on to draw a picture of "complement." Brand called the globulin fraction the "middle-piece." The albumin fraction has been called the "end-piece." We are told that union occurs in some way as follows: red blood cell amboceptor—globulin fraction—albumin fraction.

Liefmann and Cohn differ from the hypothesis of Ehrlich, saying that the complement acts as a ferment. Ehrlich, as we know, says that complement has a function analogous to that of an acid uniting with a base, being used up to form the new compound, or salt. In this hypothesis of Ehrlich's we encounter the traces of a mechanistic view and the elements of a dynamometric physiology. Such studies are highly important.

The *Journal* takes occasion to reinforce our favor for oatmeal in the diet of glycosurics.

The *Lancet* of October 28, 1911, quotes editorially the articles of the *Finnska Laekaresällskapets handlingar*, vol. liii, 1911, giving the treatment of trachoma by actinic ray. The outcome of a series of cases repeatedly re-examined is so much more encouraging than results of excision and of medicinal therapy that the conclusion is that von Groenholm and his colleague K. A. Heiberg, are justified in using the chemical photosphere.

From Cape Town, British South Africa, we discover two items through the *South African Medical Record*. W. T. Harris tells of a family pill of pure metallic antimony which is polished brightly. When required, it is swallowed and (he supposes) the juices within the *prima viae* release some of the antimony. It acts speedily both ways, and is soon ejected, when it is recovered and repolished and safely kept for a future need. Some practitioner in the country has had difficulty in consultation work. The *Record* reads him a lecture. G. E. Fitzgerald reports a case, moribund (of what is unstated) to which the tincture of digitalis, freshly prepared was given in a half-ounce dose, once repeated. The attendant nurse admitted, afterwards, that she gave the medicine with qualms in her mind, but the patient made a good recovery. Such massive doses of digitalis are of little frequency in literature. They deserve note if not emulation.

The Rev. A. Steichern and the Rev. H. Sierp of Bombay, *Indian Medical Gazette*, December, 1911, have analyzed, after study of Madame Curie's book, *La Radio-activité*, the springs of their vicinage. The Thana district is fairly active in the emanation and rays of radium. Lasundra possesses greater radioactivity in its springs, while at Tuwa there is great radiant power. Of those here even the springs in Austria excel only in three instances, as at Gastein; and once, as at Joachimsthal, in Bohemia. This means that many more sources of radioactive elements are available. The observers say that perhaps the radiant powers of these waters may cause ill to the unwary. They leave to medical men the task of saying how such waters may become therapeutically useful.

The *MEDICAL TIMES* has a sentinel on duty to catch the earliest glimpse of opportunity, but if any reader knows of therapy, new and important, of technic developed, and not noted, these columns are his to speak.

Candidly, the advances of medicine are proceeding under the Sign of the Tortoise. If this is said, not unkindly, at least it must be qualified by the remark that science cannot discover by the clock, and the advances in vaccine work, in radium study, in anaphylaxis, in arsenical therapy, in the serum treatment of cerebrospinal meningitis, in the etiology of acute anterior poliomyelitis, in state medicine, in preparation of elegant pharmaceuticals (cf. Prof. Miller) show that the territory of progress indents the realm of blood-vascular changes more fully than any other field.

Surgical Sidelights.

A pulsating tumor in the side may be an aneurism of the abdominal aorta although palpation fails to disclose its connection with the aorta.

Before performing esophagotomy for foreign body, make a final examination (radiographic or otherwise) to determine that the object has not slipped into the stomach.

Persistent dyspareunia, with no other ascertainable cause, may be found to lie in a chronic gonorrhea of Skene's ducts.

Some apparently inoperable carcinomata of the cervix will yield remarkably to repeated cauterization with the actual cautery and zinc chloride.

—(*Am. Jour. Surg.*)

WHAT IS NEW IN THERAPEUTICS

In continuation of the interesting review of the therapeutics of 1911 from *Progressive Medicine*, 1911, Vol. xiii, No. 4, by H. R. M. Landis, of the University of Pennsylvania, which was partially covered in the January issue of the *MEDICAL TIMES*, we note other data of value.

Phenol (carbolic acid). Baccelli (*Berlin Klin. Woch.*, 1911, xxxi, No. 24), commenting on the intravenous or subcutaneous injection of a 2 or 3 per cent. solution of phenol in the treatment of tetanus, tabulates 94 severe cases, reported by 48 physicians, and 38 very severe cases. In the first group the mortality was 2 per cent. and in the second from 19 to 15 per cent. He found that patients with tetanus are exceptionally tolerant of phenol, so that it is possible to increase the dosage from 0.3 or 0.5 gram to 1 or 1.5 gram, fractional in the course of twenty-four hours, and keeping close oversight of the urine. He cites only the cases of which reports have been published in the international literature, a total of 190 cases since 1888. In 11 of the 16 fatal very severe cases the dosage had been manifestly inadequate, that is, below 1 gram, and in one of the others the patient had gangrene of the arm. The total mortality of the entire 190 cases was 17.36 per cent.

Potassium Bichromate.—This product in doses of $\frac{1}{4}$ gr. (25 minims of a 10 per cent. solution in water) given alone or in a tonic mixture, such as phosphate, hypophosphite or simple iron, in a wine glass of water after food, twice and later three times a day, proved helpful in six cases of tuberculosis, reported by Tomblason (*Lancet*, Nov. 12, 1910). It matters not, he says, if the first one or two doses induce vomiting, as toleration is easily established. He says that four of the six patients are unaware they are under any special treatment. After two weeks medication improvement was noticeable.

Quinine.—Does quinine, like alcohol in excess, inhibit phagocytosis? To determine the truth or falsity of this interrogation Smith (*Lancet*, Nov. 5, 1910, and *Revista de Sanidad Civil*, Madrid, 20 July, 1911,) took the opsonic index as a basis for work, with the assistance of a solution of quinine and morphine. Choosing the very soluble acid hydrochloride of quinine, he added $\frac{1}{8}$ grain morphine hydrochloride to each 10-grain dose of the quinine salt. He figured that a 10-grain dose given to a person weighing 140 pounds would, if entirely absorbed, represent in the blood a proportion of 1 to 7500. The influence of this solution on the phagocytosis of different pathogenic organisms, such as streptococci, staphylococci, pneumococci, B. tuberculosis, B. coli, etc., was contrasted with stronger and weaker solutions to learn the effects of the different doses. Smith made 11 different sets of experiments and in the majority there was increased phagocytosis always most marked with the 10-grain dose solution, showing that the addition of quinine and morphine, in what he considered an "ideal" dose, increases phagocytosis. Smaller doses in the different groups were less effective, and an important fact demonstrated was that large doses (30 to 40 grains) diminished phagocytosis, some times to the extent of 50 per cent.

The rationale of quinine prophylax was discussed by Acton (*Ind. Med. Gaz.*, Aug., 1910,) who sought an answer to the question as to what beneficial results come from the administration of quinine for the production of immunity in persons exposed to malarial infection. He says that the method cannot absolutely control an epidemic, but is beneficial among troops and prisoners. He says it will "decrease the number of malarial cases by from 50 to 80 per cent. at the most, when the dose is given regularly and in an adequate manner," and that it decreases the gravity of cases.

In an excerpt from the *Archiv für Hygiene*, cited in *Edinburgh Medical Journal*, Graziani reports some investigations made by him regarding the possible danger of continuous ad-

ministration of small quantities of quinine as a prophylactic against malaria. He administered quinine hydrochloride to rabbits and guinea-pigs in dose proportional to that used for man in the prophylaxis of malaria. As a result, he found that the growth of quinine animals was distinctly impaired as compared with control animals receiving only injections of physiological salt solution. Apart from this interference in growth quinine had apparently little action. It appears from Graziani's experiments that any prolonged use of quinine is by no means an innocuous procedure, as it may prevent the growth of young animals, and subsequently lower their power of producing immune bodies and of resisting microbic infection.

Salicylates.—Landis assures us that despite the tendency on the part of some physicians toward therapeutic nihilism, the potency of some drugs must at times be recognized by all and he gives the salicylates in very large doses in acute articular rheumatism as a striking example.

To substantiate this opinion, which, by the way, is generally accepted, he quotes Siebert (*Med. Rec.*, March 11, 1911), who injects 10 c. c. of a 20 per cent. sterilized solution of sodium salicylate to 100 pounds of body weight for acute rheumatic infections of joints, heart, pericardium and pleura. He first uses a hypodermic injection of cocaine and 15 minutes later injects in the same spot the sodium salicylate and the dose is repeated every 12 hours. In severe cases with multiple lesions a dose of 15 c. c. of the solution to each 100 pounds of body weight is suggested.

Within three hours after the first injection pain, fever, joint stiffness and pulse rate diminish, and this improvement will continue if the injections are repeated every 12 hours, but if omitted, the conditions grow worse.

In chronic cases, 10 c.c. to 100 pounds of body weight of the following oily solution are injected every twenty-four hours. This mixture contains salicylic acid, 10 grams; sesame oil, 80 grams; pure alcohol, 5 grams; and gum camphor, 5 grams. This oily solution is sterilized before the alcohol is added, but must not be exposed to the air, as the alcohol will evaporate and the salicylic acid crystals will precipitate. The effect of the injection in chronic cases is obtained more rapidly when multiple localizations of the rheumatic process are present than when one joint is affected. In the former, pain and stiffness usually improve after the first injection; in the latter, after the third. The addition of camphor (from 5 to 20 per cent.) has been found beneficial in stimulating the heart when the pericardium or the endocardium is involved. One of the chief advantages of this method is the entire absence of all the toxic symptoms that are sometimes seen when salicylates are given by the mouth.

Another use for sodium salicylate is given by Stark (*Practitioner*, March, 1911) for nasal catarrh, or as it is usually termed "common cold." He prescribes:

R—Sodii salicylatis	gr. x
Spiritus ammoniæ aromatici	f3ss
Tincturæ belladonnæ	m̄v
Aquæ chloroformi	q. s. ad f3j—M.

Sig.—Every four hours.

Stark is emphatic in the belief that to give quinine to a person suffering from influenza, with severe headache, furred tongue and acute pain in the limbs, merely adds to his discomfort. He cuts the disease short in two days, he says, by giving a mercurial purge, followed by sodium salicylate, potassium bicarbonate and tincture of nux vomica. Stark, from an experience with sodium salicylate in mumps, strongly recommends five grains each of sodium salicylate and sodium bicarbonate, given in sugar and water sufficient to make one-half ounce every two to four hours.

Santonin.—A note in *Union Pharmaceutique* (Jan., 1911), advises against the administration of santonin to children under two years of age. A case is described where its use for the expulsion of *ascaris lumbricoides* in a 5-year-old child was

attended with unpleasant results. This is not sufficient evidence against this old-time drug to prevent its general acceptance. We have employed it for young children many times without the production of any disturbance.

Sodium Citrate.—This drug is advocated by Lichtwitz (*Ther. Monat.*, 1911, xxv, No. 81) in place of sodium bicarbonate for use in acidosis. He claims it is practically tasteless, may be added to the food or given in water and lemon juice. Although he has given as much as 50 grams a day it has caused much less digestive disturbance than the bicarbonate and diarrhea has never followed its administration.

Serum Therapy and Vaccine.—The review given by Landis of these important subjects is so comprehensive that we are quoting very liberally from his deductions.

Antidiphtheritic Serum.—While regarding antitoxic serum as a specific, Goodall (*Brit. Med. Jour.*, 1911, No. 2615) believes there are certain limits to its use. He believes in the importance of early treatment, but has modified his earlier view that the limit of its use is the limit of dosage. After the introduction of this serum, and later the sera of tetanus, the streptococcus, and enteric fever, a symptom complex was found to occur after serum injections in a number of cases. This has been called "serum sickness," and has been found to be due to the serum itself, and occurs in about 33 per cent. of the cases treated. The general symptoms are fever and a rash, usually urticarial in nature. Other and more severe symptoms were observed in 3 to 4 per cent. of the cases, namely, acute pain and swelling of the joints, pain in the tendons and fascia. These general symptoms rarely set in before one week after the serum injection, and sometimes three weeks. The fever, rash, and occasional arthritic symptoms are known as the "normal reaction," and are due to the horse serum. It is known that the sera of other animals can give rise to the same effects. In the great majority of cases, the normal reaction, while unpleasant, is not dangerous. "Abnormal reactions" were next recognized, and divided into those following a second injection of serum, and those following a primary injection. Abnormal reactions following a second injection have the usual incubation period of at least one week.

This reaction is unusually severe and abrupt. There is faintness and much swelling of the body surface and the mucous membranes from the urticaria.

A second type of this class exhibits an incubation period shorter than usual, from twelve hours to six days. This is termed "accelerated reaction," and exhibits severe urticaria! swelling, vomiting, prostration, and swelling of the joints. In a third type of this group, called "immediate reaction," the serum reaction appears within a few minutes to five or six hours after the injection, and exhibits an explosive suddenness, high temperature, cyanosis, and rigor. From these facts, therefore, it is deduced that in certain persons injection of a foreign serum leads to increased susceptibility to that serum if repeated. "Abnormal reactions" following the first injection are more severe and often fatal. Gillette collected 30 cases of this kind, 16 of which were fatal. Most of them occurred in the United States. Twenty-two in this series were subject to asthma of some form or other. The symptoms of this class of cases are usually intense dyspnea, failing respiration, with cyanosis and collapse. They occur shortly after the injection. Goodall believes that an indiscriminate use of the serum as a prophylactic is unjustifiable. A delay of a day or two in doubtful cases not laryngeal is justifiable. In undoubted diphtheria he would hesitate to give the serum only when the patient is asthmatic. If the disease is severe or the larynx is involved, the choice between the two evils would be to give the serum and risk the possible hypersensitiveness. The earlier the treatment in any case, the smaller the dose necessary. Large doses of calcium lactate tend to mitigate the rash of serum sickness.

Wallace (*Med. Rec.*, Jan. 7, 1911) warns that individuals peculiarly susceptible to the odor of horses or stables, and those subject to asthmatic attacks, hay fever, and bronchitis, should have horse serum administered only upon most urgent cause, and then with due prophylaxis. Insufficiency or inadequacy of the suprarenal glands may account, in the asthmatic type, for the peculiar reaction. He suggests the administration, hypodermically, of aqueous extracts of the suprarenal glands previous to the use of serum in this class of cases as desirable, in order to rehabilitate and control the vasomotor system, and thinks it should prove of great prophylactic value, as well as useful in the heroic treatment of the acute attacks of "serum disease."

Cumberlege (*Brit. Med. Jour.*, July 8, 1911) is in favor of oral administration of diphtheria antitoxin, for the following reasons: Results are obtained within a few hours after being given, a far smaller dose is required (Cumberlege has never given more than 4000 units at a time; a dose of 2000 units, followed up, if necessary, by a further dose, is the usual amount given). By giving it in this way, it is possible to give continued dosage by making a mixture and ordering it to be given every two or four hours, as the case may be. Another point in its favor is that no patient treated by him by mouth has shown signs of serum sickness, whereas either a rash or joint pains, or both, have nearly always occurred after the few injections given. (This is a recognized practice of the homeopathic school.)

Blood Serum.—The direct transfusion of blood for curing bleeding in newly born babes, while often successful, is still attended with danger, says Welch (*Archives of Pediatrics*, Sept., 1910). He regards the intravascular destruction of transfused blood corpuscles, and the occurrence in the marrow of leukocytes engulfing one to several red blood cells, as evidence that the transfused corpuscles are foreign material merely, and not essential to such accidents as occur by embolism or thrombosis. He, therefore, has investigated the value of the injection of normal human serum, in cases of hemophilia neonatorum, with results which promise much.

He reports 8 cases, only one of which died, and in this case the death was due to persistent atelectasis forty-nine days after all bleeding had ceased, and at autopsy none of the tissues showed signs of bleeding. The hemorrhage ceased usually after two or three days of injections, in several cases immediately upon beginning the injection treatment. The amount injected varied from 6 to 10 c.c. to a dose, and from 10 to 65 c.c. per diem. The temperature, which was elevated during the continuance of the bleeding, and the loss in body weight, which was, of course, rapid during the bleeding, were promptly checked. In 3 cases a prompt gain in weight took place.

The apparatus which Welch uses consists of an Erlenmeyer flask, stoppered with a rubber stopper, through which pass two tubes: (1) A straight tube drawn to a fine point and filled with cotton and equipped with a rubber tube, such as is used for drawing blood up into a hematocytometer pipette. (2) A U-shaped tube, fitted with a needle, which is cotton-plugged into an arm vein; the blood may be drawn into the flask by suction and allowed to coagulate. When the serum has separated it may be used.

Welch is convinced that the injection of normal human serum never gives serum sickness nor causes anaphylaxis, and further believes that it is actively bactericidal, and cites its use in a case of streptococcemia in which the injection of 50 c.c. of serum apparently brought about a subsidence of the temperature and a clearing of all bacteria from the blood.

One phase of the employment of normal human serum which Welch alludes to, and which a survey of his cases suggests, should attract the attention of the pediatricist. It is rapid gain in weight of some of the cases and the fact that the serum is physiologically a perfect food. So many children die during

acute illness because, with the affection of lung or ear or meninges, the digestion is depressed, and even the weakest food cannot be converted into substances which can be utilized by the body tissues. Notorious is the falling away of children subsequent to the intestinal affections of summer, when the stools have cleared, the temperature subsided, and the toxemia disappeared. There surely is a field among these cases for the use of this serum.

Serum Treatment in Plague.—Sinclair reports three cases of plague treated with the Yersin-Roux serum. (*J. A. M. A.*, Vol. LVI, No. 5.) In one case the serum failed to accomplish a cure, in the second case one injection sufficed to give good results, and in the third case two injections were necessary. The serum used in these cases was that known as "dry serum," and was made by the Pasteur Institute. He believes that this is far superior to the liquid serum, and it may be that the liquid serum is responsible for the poor results reported by some observers.

Antityphoid Vaccine.—In concluding an article on this subject Gosman, (*J. A. M. A.*, 1910, Vol. LV, p. 1169) says the inoculations against typhoid fever are most valuable as a prophylactic measure and they should be especially used upon all nurses, physicians, medical students and hospital attendants, and on those who are likely to visit sections where typhoid is existant. Gosman is convinced of the harmlessness and the effectiveness of these inoculations.

According to the report of the Surgeon General of the Army for 1910, typhoid fever was 16 times more prevalent among the unvaccinated than the vaccinated troops for the year ending June 30, 1909. Up to Oct. 10, 1910, there were 5 cases among immunized soldiers and 418 among unimmunized, and in four of the former the diagnosis was doubtful.

Richardson and Spooner report 1588 inoculations upon 405 nurses in various training schools for nurses in Massachusetts. (*Bost. Med. and Surg. Jour.*, 1911, Vol. CLXIV, p. 8.) As yet there have been no untoward results, and they believe that the inoculated individuals have acquired an increased resistance to typhoid fever that will last for several years at least. They expect in the coming year to extend the influence of these inoculations, especially among nurses and those attendant upon the sick. Furthermore, they have strong faith that the procedure will, within a short time, find increasing favor with the general public, which, exposed as it is to many sources of infection, is in great need of specific protection.

Anders finds the results obtained by different clinical observers with the use of vaccines in the treatment of typhoid fever are extremely variable, some writers reporting favorably, and others finding either no specially striking effects or entirely negative ones. (*J. A. M. A.*, 1910, Vol. LV, p. 2023.) Anders reports 8 cases treated with vaccines, with no striking results. Small doses of vaccine were employed, namely, initial doses of 25,000,000, and subsequent ones of 50,000,000 each. These injections were repeated at intervals of seventy-two hours. The author believes that phagocytosis probably plays an important role in the cure of typhoid fever, and, therefore, a vaccine should stimulate an increased leukocyte count. He found that the doses of vaccine he employed did not appreciably increase the leukocyte count. Anders concludes by saying that the value of vaccines for the following purposes must be conceded: (1) As a means of prophylaxis; (2) in suitable cases when continued during convalescence to prevent relapses; (3) to combat local infections with the typhoid bacillus, as, for example, bone suppurations, which arise in the period of convalescence; and (4) for the removal of the typhoid bacilli from the feces and urine in the case of typhoid carriers.

Stoner, in his résumé of vaccine therapy (*Am. Jour. Med. Sci.*, 1911, Vol. CXXI, No. 2), appends a table of the results obtained by various authors with vaccines in enteric fever.

TYPHOID FEVER.

Authors.	Cases.	Results.
Richardson	40	Five per cent. relapsed; 163 cases not inoculated; 21.4 per cent. relapsed.
Illman	1	Not benefited.
Watters	30	Had mild course. One case not benefited.
Watters	4	Had mild course.
Smallman	36	Generally a mild course. Three deaths.
Semple	9	Generally a mild and short course. All recovered.
Nichols	11	Generally mild; no deaths; 2 relapses.
Richardson	28	Only one relapsed.
Raw	9	No marked effect; 2 died.
CARRIER CASES.		
Irwin and Houston.	1	Cured.
Houston	3	Two cured; one markedly improved.

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The treatment of typhoid fever by bacterial vaccines, Stoner remarks, has not met with very marked success as yet, and the results claimed by various authors are at variance. Richardson has not noted any marked improvement due to the treatment, but thinks that relapses are largely prevented. Other observers do not note this fact, but are of the opinion that when treated with vaccines the disease has a much milder course. In the 34 cases treated by Watters and Eaton the temperature became normal in 1 case on the eighth day, in 1 on the eleventh, 1 on the twelfth, 1 on the fourteenth, 2 on the sixteenth, 2 on the seventeenth, 3 on the eighteenth, 1 on the twentieth, 2 on the twenty-first, 4 on the twenty-second, 1 on the twenty-fourth, 1 on the twenty-sixth, 1 on the twenty-seventh, and 2 on the twenty-eighth day of the disease. Two of the cases that reached normal on the seventeenth day had relapses, and several cases did not respond at all. These authors compare the death rate of 31 cases treated with vaccines to that of 46 others that received routine treatment only. In the former the death rate was 3.2 per cent., while in the latter it was 11.1 per cent. Two of the cases treated by Semple with autogenous vaccines had normal temperatures on the eighteenth and nineteenth days respectively.

Vaccines in Puerperal Sepsis.—Watters and Eaton (*Bost. Med. and Surg. Jour.*, 1911, Vol. CLXIV, p. 524), report 50 cases treated with vaccines. Four died within 24 hours after treatment, being beyond hope of recovery when the injection was made. Three others were moribund, but lived two or three days. Two others died after surgical intervention. The other 41 recovered. The authors administered a polyvalent preparation immediately after bacteriological test diagnosis. This was superseded 24 hours later by an autogenous vaccine. Watters and Eaton are of the opinion the vaccines should not replace other treatment but should be used as an adjuvant.

The results obtained by vaccine therapy in the treatment of puerperal septicemia, says Stoner, are particularly gratifying, especially in 18 cases reported by Hartwell, Streeter, and Green, in which every case recovered. No less remarkable is the series of 47 cases treated by Leary, in which there were only 4 deaths. Leary states that in most of these cases vaccine therapy was only used as a last resort, and 2 of the cases were moribund when treatment was begun. Martyn's case had received three doses of antistreptococcic serum without the slightest effect before vaccine treatment was adopted, after which improvement took place rapidly.

Vaccines and Rheumatic Diseases.—Ball reports in detail a few cases of rheumatoid arthritis that were favorably influenced by the use of streptococcus vaccines. Ball was impressed by the peculiar sapremic appearance of chronic rheumatic cases, and in some of them it was possible to trace in the history the onset of the disease following on some distinct infection, or subsequent to a chronic suppuration. He believes, from experience with a large number of cases, that the focus of infection can at times be ascertained, and although a few are probably due to specific microorganism, many cases are due

to a general sapremia following from a localized seat of infection. He has seen many cases where the focus of infection has been found microscopically to contain chiefly streptococci. In some cases even, where no seat of infection, such as bad teeth, leucorrhea, intestinal putrefaction, and colitis, could be found, he has used the antistreptococcic serum with success. So many of these cases responded with such remarkable results that he thinks their use is justified in all doubtful cases. Even in a case of acute articular rheumatism following an attack of gonorrhea with subsequent gleet he has had success, by the employment of antistreptococcic vaccines, where the injection of gonorrheal vaccines had failed.

TREATMENT

SUGGESTIONS FOR PNEUMONIA TREATMENT.

The ideal treatment for pneumonia would be a protective serum, but thus far no very satisfactory results have been obtained, says Beck (*Interstate Med. Jour.*). The same may be said of vaccines, leucocytic extracts, etc. Until some specific agent is discovered, we must content ourselves with the knowledge that three-fourths of all cases of pneumonia recover without treatment, and that too vigorous treatment may actually do harm. The general management should be much the same as that of typhoid. Frequent examinations of the chest in severe cases should be avoided, as they tend to overtax the strength of the patient and may result seriously. Fortunately the indications to be met by treatment are best disclosed by the general symptoms of the patient.

The diet should be light with plenty of fluids, such as water, albumin, milk, lemonade, strained cereals, eggs, etc.

Measures directed toward the arrest of the disease are of doubtful value, although veratrum viride finds favor in the hands of some eminent clinicians, and digitalis in large doses has recently been highly extolled.

For the prevention of vasomotor paralysis A. Fraenkel recommends digitalis, administering as much as 0.75 grm. a day for three or four days, although he does not give it in cases in which such large doses would be ordinarily contraindicated. Forcheimer recommends caffeine in doses of 1¼ to 5 grains every four hours. Baths and fresh air, by their counteracting influence on the toxemia, diminish the tendency to vasomotor paralysis. Sufficient sleep is a factor of equal importance in inhibiting this vasomotor phenomenon. If, in spite of this treatment, the symptom-complex develops, active treatment must be begun at once. Forcheimer recommends the following: "Adrenalin is employed for the purpose of contracting the blood-vessels of the splanchnic area, for which it has an elective affinity; hypodermoclysis or venous transfusion with large quantities of normal saline solution for the prevention of asystole, one or two ice-bags on the abdomen, which reduce the pulse probably by stimulation of a splanchnic reflex." For hypodermoclysis adrenalin is recommended, 1 c.c. to a 1/1,000 solution, given every 2 to 4 hours. Caffeine may be substituted after 24 hours for cardiac insufficiency. Preparations of digitalis, either by mouth or better by hypodermic injections, are indicated. Camphor or caffeine, either independently or in conjunction with digitalis, are often of great value. It is in this condition that blood-letting offers the greatest relief in pneumonia.

Gibson (*Edinburgh Med. Jour.*) remarks that when there is pain, due to any pleurisy accompanying acute pneumonia, external applications of heat are extremely soothing. In certain cases of early acute pneumonia, in strong, robust individuals, the employment of the ice-bag or the cold water coil will be found decidedly beneficial; and when there is a high degree of pyrexia (and, still more, hyperpyrexia), the use of sponging and the wet pack—and even the cold bath—may be absolutely

necessary. But above all present systems of treatment the best is vaccination.

The various sera undoubtedly produce considerable benefit in acute pneumonia; but they are far more efficacious in instances of unresolved pneumonia and in various pneumococcal infections of other parts of the body than in acute pneumonia itself. The influence of such stock sera is by no means equal to the effects of vaccines made from the patient's own microorganisms. But the trouble is that, in a very large number of cases, the disease is so severe and the course so rapid, that there is scarcely time to obtain a vaccine. In cases where there is severe toxæmia and great leucocytosis, much may be done by the employment of quinine. In several instances of this kind—in which the patients had even reached a stage of profound coma, with complete relaxation of the sphincters, and every evidence of imminent danger—the hypodermic use of quinine has produced the most remarkable effects. The best preparation for this purpose is the acid hydrochloride, which is extremely soluble, and which may be administered in hypodermic doses of two grains every two hours or even every hour.

Cold sponge baths and cold air treatment are harmful and brutal, in the opinion of Mitchell (*Med. Rec.*). Nature provides the turbinates to warm the inspired air. Cold air antagonizes nature. It is impossible to give children a cold pack unless they are in stupor or delirium. When an adult is near the borderline of death he is as delicate as a child. His fever needs no special attention—no cold pack, no antipyretics. Fever does not constitute the danger; it merely announces it.

A CONSIDERATION OF SULFUR.

Recent literature is pregnant with suggestions for the use of this element. From Europe come the praises of ichthylol in whooping-cough. The treatment is constitutional. From Chicago comes the reiterated harmony of reports upon iodized lime and sulfid of lime. Our grandmothers employed sulfur and molasses every spring-time. We use sulfur ointment as an anti-parasitic. Writers say that erysipelas may be well treated by the administration of calcium sulfid. Does indicanuria indicate a physiologic effort to oppose resorption? The sulfur of the *primæ viæ* may be of genuinely antiseptic purpose.

Sulfur occurs in gluten, vegetable albumin, acrid volatile oils, as mustard, in albumin of animal source, fibrin, casein, muscle, and in hair (which contains from four to five per cent. of the metalloid).

Sulfur is insoluble in water and is soluble in turpentine, the fixed oils, benzene, chloroform, ether, alcohol, and especially in carbon disulfid. It unites chemically with every element except nitrogen. It is electro-negative usually, and as such unites with hydrogen, and also is soluble in carbon disulfid when electro-negative. When electro-positive it unites with oxygen, but in this electro-ionic state cannot exert a heterogeneous attraction for carbondisulfid (be dissolved in it).

Parasites do not pass readily through oily mediums. The skin seems to be of an oily nature, and in it sulfur is at home. Magnesium sulfate is employed as an antiseptic. This is soluble in warm water. Is its action due to the positive magnesium ions, or to the oxyacid radical?

From these scattered observations can we draw any conclusion? We can see that no parasites of purulent infection are operative in muscle, in hair, in fibrin, in albumin. In fatty tissues we find abscesses. Infection is readier in that soil. There are clinicians who assert the need of saturating the body with sulfur to combat infection. Wood says that sulfur acts upon the liver; it is a hepatic stimulant, a laxative, cholagog, and intestinal antiseptic. The function of the liver in urea formation, in the production of amino-bodies, which circulate, and in glycogen thesaur, the difficulty which in diabetes tends to boils, may turn our eyes deeper in the study of the

value of sulfur as a conservator and protective as well as eliminant.

F. Sarvonat and Charles Roubier of Lyons report the work of MacCradden on sulfur in osteomalacia in *Progrès médical*, 30 December, 1911, and refer to it as it appeared in the *Journal of Biological Chemistry*, 1910, VII., p. 199. Wells in his Harvey lecture, 1910-11, spoke of the relation of sanguineous calcium-content. MacCradden shows that in the osteomalacious blood the CaO and the phosphoric anhydrid contents are decreased while those of magnesium oxid and sulfur are quadrupled.

Following out what we previously noted, we might take issue with the conclusions of Sarvonat and Roubier, who say that osteomalacia may be a disease affecting the thyroid. This may be so. We see in the increase of sulfur and magnesium some response to an irritant, or stimulus—possibly infectious. The action of osteoclasts must not be forgotten, but we cannot say what Wells imputes to their function chemolytically. In his Harvey lecture of last winter we do not recall his use of the word osteoclast. But he asked indulgence until a printed account should appear.

Savonat and Roubier say that the glandular dystrophy present is of a thyroid type (Hoennicke, *Berl. klin. wochen.*, 1904) the oophoric type, (Curatulo and Tarruli, *Zentralbl. f. Gynaek* 1895), or the hypernephric type, (Bossi. Also, Bernard, *La Presse médicale*, 1909).

The results of work by Parhon and Goldstein, showing that the thyroid content may be superior to the normal (*Soc. Biol.*, 1908, p. 701) are quoted by Savonat and Roubier as evidence against the theory of hypo-thyroidism. While this is true, it does not conflict with the theory of infection. The iodine would be augmented in such an event.

THREE PERIODS IN THE MANAGEMENT OF SYCOSIS.

Sabatié, in the *Progrès médical*, December, 1911, says we should regulate our measures according to the three periods; of suppuration, of dermatitis, and of constitutional reaction.

A. Shave the affected region and preserve aseptis. Radiotherapy is advised when possible, and, although Sabatié does not note it, the choice of rays should be made according to the classification of Wickham, who, in his book (Paris, 1911), says that the alpha rays are electro-positive, the beta rays are electro-negative, and the gamma rays are ethereal, or merely vibratory. He plainly says that these rays are separate and distinct from radium emanation. This emanation is the chief and radiant form of the element. Sabatié recommends the use of lotions.

B. During the second period or that of dermatitis, use pastes: of styrax and oil of sweet almonds; of calomel or turpeth mineral and oxid of zinc upon a petroleum base (see *THE MEDICAL TIMES*, April, 1911, page 237, Fat and Oil as Excipients), or use precipitated sulfur, tannin, oxid of zinc, and some petroleum base.

C. Constitutional treatment is both local and general: (a) use a wash of sulfate of zinc upon the skin area; (b) use such general treatment as in eczematous conditions would be appropriate. (Does this mean that Sabatié thinks that a similar dyscrasia exists in the pre-formation of eczema and sycosis?)

Sabatié says that in the sycosis due to a trychophyton we should add the local exhibition of iodine, as in the tincture of iodine, or Lugol's solution.

The Use of Calcium Sulphide.

This drug has given favorable results as a local and intestinal antiseptic. A physician who is enthusiastic over its merits writes that he uses it with much success in the treatment of boils and enlarged glands; that it modifies pertussis; that if given to saturation it will cure erysipelas; and is a specific in gonorrhea.

Antityphoid Vaccination.

Surgeon J. M. Phalen, U. S. A., New York (*Journal A. M. A.*, January 6), describes the experience so far with antityphoid inoculation and the methods in use in the United States army. The vaccine employed is made by Dr. F. F. Russell in the laboratory of the Surgeon-General's office in Washington. The organism used is from an old culture that has ceased to be pathogenic and is sent out in sealed ampules containing 1 to 25 c.c., after having been thoroughly tested for bacteria and by inoculation into guinea pigs. The immunizing dose is given in three injections at intervals of ten days; the first of 0.5 c.c., the second and third of 1 c.c. each. The injection is given with an ordinary hypodermic syringe into the deltoid muscle near its insertion. The site may be sterilized in any way, but with the large numbers treated at once in the military service, it is customary to paint the skin with tincture of iodine before the operation and touch the needle wound with it afterward. The reaction is usually not severe, and is comparable with the lighter cases of vaccinia following small-pox vaccination. It should not be given to persons with any illness or to the aged and debilitated, and a case has been reported of latent tuberculosis incited by it. Russell estimates the percentage of very severe reactions at 0.1 per cent., and attributes them to the introduction of the vaccine into a large vein. At first a voluntary measure, typhoid immunization has been made compulsory in the United States army for all officers and men not over 45 years of age who have not had an authenticated case of typhoid fever. About 60,000 men have completed the three inoculations. At the barracks where Dr. Phalen has been recently stationed, each recruit is vaccinated against small-pox and given the first antityphoid inoculation on enlistment. At the time of the second inoculation many men are suffering from vaccinia, and the reactions are frequently more severe, though quite transient. With this rather unavoidable exception, the inoculations are not given to any one in any way out of health. Phalen gives a history of the use of antityphoid inoculation in armies, and says that nowhere do we get so convincing evidence as in our own army experience. In the 60,000 men who have been inoculated, there have been but twelve cases of typhoid and no deaths, and the typhoid-rate is only one-sixth as great in the inoculated as in the uninoculated. One man in the Guantanamo Naval Station died five days after his first inoculation from a case of walking typhoid, but this is the only case of the death of an inoculated man from typhoid in the government service. Among the nearly 13,000 soldiers near San Antonio there was only one mild case of typhoid, while forty-nine cases with nineteen deaths occurred in San Antonio in the city population. As regards paratyphoids, these are presumably not affected by antityphoid inoculations, though clinically they are similar, and, if the proportion of paratyphoid cases is high, the results may be a little disappointing. Possibly a mixed typhoid and paratyphoid vaccine might be indicated. The duration of immunity is not yet settled, but Firth estimates it from British data at thirty months. Leishman thinks the reinoculation should be given after two years. In the United States Army, with its three-year enlistment period, the rule is for inoculation to be given at each enlistment. Further experience is needed as to this point. The treatment of actual typhoid by inoculation is still in the experimental stage, but the opinions deduced from experience are altogether favorable. It shortens the period of fever and total duration of the disease and markedly reduces complications and relapses. The mortality, as deduced from the reported cases available, is found by Phalen to be 4.9 per cent., and all agree that it does no harm even where it does no good. The dosage is increasing and the results appear to be better. In the treatment, however, the vaccine has yet to definitely prove its full value.

Peculiar Pneumonia Facts.

Interesting cases are recorded by J. A. M. A. on pneumonia, which are out of the ordinary. They are based on reports to the *British Medical Journal*. Dr. Tyson called attention to three cases in which mania follows pneumonia; the literature contains only six others. The following are the characteristic points in this form of pneumonic mania: The pneumonia is of the sthenic or classical type. The people affected are mostly of a neurotic temperament. It generally happens in youngish people under 40 years of age. It is associated with great sleeplessness and there seems great difficulty in the treatment of this symptom. The disease need not necessarily be very acute or much lung involved. In fact, the amount of lung involved does not seem to bear any relation to the amount or length of stay of the mania. It occurs after the crisis. The delirium that occurs early in the disease is a much more severe type of mania than the mania following the crisis. The pathology, Tyson supposes, is toxic, but he is unable to say why some suffer in this way and others do not. The prognosis of this mania is good and it should be looked on as part of the pneumonia and should not be specially treated as a case of mania *per se*, and the question of asylum treatment need not be considered. Tyson mentions this point because in one of his cases the physician in attendance considered the mania should be treated in an asylum. Perhaps the most important thing in this trouble is to treat the sleeplessness. Food is the best hypnotic, but it may be necessary to give some morphin or some other narcotic. The bowels should be attended to. A tactful, wise and firm nurse is a necessity, and convalescence, if possible, should be carried out in the country.

The other instance was a case of ante-natal pneumonia. The attending physician, Dr. McDonald, found the mother had lobar pneumonia two days before term. There was considerable physical embarrassment during the labor and the patient was freely stimulated and oxygen was administered at intervals. The child was feeble, but cried soon after birth. It was slightly cyanosed during the night, but this improved in the course of the following morning. Later the breathing became labored and increasing cyanosis was noticeable. There were only one or two attempts at coughing. Respiration quickly became sighing and mucus accumulated in the larynx; death occurred twenty-eight hours after delivery. From the advanced inflammatory changes present in the fetal lungs so soon after birth it is probable that the pneumonic condition originated *in utero*. Films from the lung were stained and in them large numbers of pneumococci were present, similar in morphologic character to those in the mother's sputum.

Movable Kidney.

1. The kidney is not an abdominal organ.
2. The movable kidney produces in many cases great distress and the most diverse symptoms.
3. A movable kidney may exist without any other condition.
4. Frequently a movable kidney co-exists with general abdominal ptosis and requires separate treatment.
5. Movable kidney is often found with many other abnormal conditions of the system.
6. The symptoms produced by the movable kidney can only be relieved by proper fixation.
7. The proper fixation of a kidney will not relieve other independent abnormal conditions.
8. The most careful differential diagnosis must be made in all cases.

Many cases of loose kidney are due to a fall or a strain, especially in young women. Sometimes it seems due to severe labor. The symptoms gradually increase in severity, disturbances of digestion, flatulency, atony of the colon, etc., and as the kidney becomes looser, twisting occurs, nephritic colic develops. Such cases are promptly and permanently relieved by fixation.—Carstens in *Amer. Jour. Surg.*

DIET, HYGIENE AND NURSING

COLLEGIATE PHYSICAL EDUCATION.

It would seem that the ideas of physical education set forth in another page of this issue of THE MEDICAL TIMES by Dr. J. A. Gwathmey, of New York, are likely to be adopted to a considerable extent at Princeton University. A department of Hygiene and Physical Education has recently been established in charge of Dr. Joseph E. Raycroft, formerly of the University of Chicago. His chief aim is to develop the student body into a sturdy race of young men, and with this end in view the study and practice of hygiene and hygienic measures have become a part of Princeton's curriculum. It is intended to lessen the handicap due to physical defects or weaknesses, by prescribed and supervised work; to encourage the formation of habits of regular and systematic exercise; to secure the educational and character-building value of competitive games; and to promote the general health and physical efficiency of the students.

With this end in view, instruction will be given in personal hygiene; physical examinations made; and graded work organized in the wide range of exercises and games in the gymnasium, the swimming pool and on the fields.

Each student will be given a careful physical examination in which the emphasis will be placed on investigating his functional condition. The examination will include a few anatomical measurements; strength tests for determining muscular efficiency; and an examination of the eyes, ears, nose, throat and the vital organs.

These observations are intended to serve as a basis for advice as to special corrective exercises, if needed, and an opportunity for a discussion with each individual on the various practices and habits that affect his physical and mental efficiency.

Dr. Raycroft will deliver a series of hygienic lectures, consisting of discussions of the basic elements of health and physical efficiency; the influence of diet, exercise, bathing and sleep; the effects of personal habits, the use of alcohol and tobacco; and a study of the more common infectious diseases—their nature—causes—methods of transmission and prevention.

The work in swimming will be graded from elementary work in the breast stroke and back stroke to the racing stroke and methods of life-saving and resuscitation of the apparently drowned.

These courses will be required work for freshmen, and if successful, it is anticipated they will eventually become part of the required routine of upper classmen.

The time is not far distant when a physical department will be one of the most important elements in all collegiate institutions. Dr. Dudley A. Sargent, of Harvard; Dr. W. G. Anderson, of Yale, and Dr. Jay W. Seaver, for many years at Yale, long ago discovered the impelling necessity of training the bodies as well as the brains of college students, and their persistent efforts to make physical education a part of the college curriculum are bearing fruit.

Another interesting fact is that many of the physical directors of the larger colleges and universities are especially trained medical men. Indeed, hygiene and physical training are almost becoming a medical specialty. Among the better known college physical directors who are physicians are Drs. Anderson of Yale, Sargent of Harvard, Raycroft of Princeton, Babbitt of Haverford, Phillips of Amherst, Lambeth of Virginia, Maylen of Columbia, Clapp of Nebraska, Williams of Minnesota, Stauffer of Pennsylvania, Dudley of Vanderbilt, Naismith of Kansas, Reed of Chicago, and Savage of Carnegie Technical Schools.

DIET AND THE KITCHEN.

During the past year the *Paris médical* has given a weekly summary of classified diet lists, with appetizing French suggestions for cooking. The issue for April 15, 1911, was devoted to lists of drinks suitable in intestinal disorders accompanied by diarrhea. These are intestinal correctives, anti-diarrheics, nutritives, sedatives:

1. *Albuminated water.* Take 250 cubic centimeters of water, to which add the white of one egg. Beat slowly for ten minutes, after which pass through a fine cloth. Aromatize according to physician's orders. A teaspoonful of pulverized sugar and some lemon juice—cognac, champagne or saccharine—as desired, should be included.

2. *Rice-water.* Use 150 grams of whole rice. Prepare the rice by washing and adding to it 250 cubic centimeters of cold water, and bringing to the point of boiling. Decant and drain. Pour on one liter of water and boil gently in a closed jar. Water may be gradually added to preserve the quantity. Pass through a cloth previously washed in boiling water. Administer the rice-water hot or cold, as the case requires.

3. *Rice-water (from rice-flour).* Use 20 grams rice-flour and one liter of water. Stir the flour in one-fourth of the water, and then pour into the remainder. Boil slowly for ten minutes, adding enough water to preserve the quantity.

4. *Bilberry Tea* (vaccinium, or common blueberry, huckleberry, whortleberry). Take 125 grams of berries, wash and soak in cold water for an hour. Then boil slowly for an hour. Add sugar and pass through a horse-hair sieve. To increase the astringency of this tea, if deemed necessary, add several dessert spoonfuls of red wine, which contains tannin.

5. *Bilberry tea with rice.* Use 125 grams of berries, 50 grams of sugar, 1.25 liters of water and 20 grams of rice. Let the berries soak in cold water for an hour. Wash the rice so that it swells, using little water. Drain the rice and pour into the macerated berries. Boil all together, slowly for a half hour, and add the sugar. Pass through the horse-hair sieve.

6. *Barley, or Sago, Tea.* Use 50 grams of barley or sago and one and a half liters of water. Wash the grains with a little warmed water, then throw them into cold water, bringing gradually to a boil. Let it boil slowly for two hours to make one liter of draught. Strain *secundum artem*.

7. *Arrow-root Tea, or Tea of Salep.* (Ed. The latter is South-sea arrow-root or Tahiti Salep. The true Salep or Salop is from the *Orchis mascula* or *Orchis Morio*. A farina is made from their dry tubers.) Use 50 grams of starch of salep or arrow-root. A liter and a half of water is needed. Add a little of this water to the farina and let it stand, cold, for ten minutes. Then boil slowly in the rest of the water for a half hour. Sugar or wine may be added.

8. *Flaxseed Tea.* Use a soup-spoonful of grains of flaxseed and one liter of water. Wash the seeds well, and dry with a fine cloth, afterwards crushing with a wooden roller. Boil slowly for a half hour, and strain. Aromatize with lemon or sugar.

To this list we may add salted and spiced milk, when milk is not contraindicated.

A. *Salted milk.* To a bowl of pure whole milk add a little sodium chlorid. Stir and drink cool.

B. *Spiced milk, cold.* To a bowl of pure whole milk add a dash of salt. Stir in some pulverized cinnamon or nutmeg. Vanilla may be added. The requisite flavor is obtained by the most delicate blending and judicious amount, not over-doing.

Circumrectal Abscesses.

Infections in the deep circumrectal spaces are usually not due to prostatic, urethral and uterine conditions, says the *New York Med. Jour.* Early diagnosis and treatment are of the utmost importance, for they are really dangerous to life.

THE BATH ROOM AS A HABIT FORMER.

We are assured by those who know that however the rest of one's house looks, the bathroom must be spotless. Instead of spending money for fol-de-rols in the parlor, put that expense into tiled floors and wainscoting, full length mirrors and bath accessories in the bathroom, for all these things make an impression on the child. There is sense in this thought, too. Cleanliness is next to Godliness, though it is hard to impress this precept on the rising generation. Nothing appeals to the youthful mind more than cheerful surroundings. The *Bulletin* of the Chicago Health Department advocates the bathroom as an aid in forming good habits. It remarks that the influence of an attractive and well equipped bathroom in helping children "to form habits of personal cleanliness cannot be overestimated. A prominent New York settlement worker in a recent address said that it was not because the poor people of the city were by nature dirty and untidy, but because from their childhood they had not had the bathroom facilities that would give them a chance to keep clean.

"In order to help children in the formation of good habits, you should get them to take a delight in doing right things. They are not likely to want to take baths because 'they are good for them,' for the simple reason that they cannot see nor understand the whys of sanitation. But they do take naturally and most kindly to things that are pleasant. If the bathroom is dark, stuffy, cold and disagreeable, they will avoid it and enter it only when compelled to. If, on the other hand, it is light, airy, heated in winter and with tub and fixtures clean and attractive, they will find joy and pleasure in its daily use.

"Here is a story told by a Chicago mother: 'About a year ago my husband was given a raise in salary and we decided to use the money in refitting our bathroom. We did this for the reason that our boys would not use the old one without rebelling every time I asked them to bathe. Well, when the work was all done and the room looked so clean and white, the boys changed front immediately. The only trouble I have now is that once in awhile there is a scrap between the boys on account of one of them staying in too long.'

This idea will also apply to some adults. It is rather astonishing to find men and women in this day and generation who bathe but once a week. We are reminded of a college student from an inland town who came to New York for the first time and by the kindness of a relative was installed in a well known hostelry. A private bath was attached to his room and he apparently viewed it with awe, for after writing his mother of the beautiful furnishings in the room, he said, "and the tub in the bathroom is so snowy white and inviting that I am extremely sorry I shall have to go back to college before Saturday night and so must lose my opportunity to test it."

More water outside and inside many people would give the medical profession less to do.

International Bath Conference.

An international conference on People's Baths and School Baths will be held at Scheveningen (The Hague) during the last week of August, 1912. The preliminary circular states that the chief purpose of the meeting is the promotion of public interest in bathing, and that it is intended to afford an opportunity to all those interested in the subject to compare notes regarding the best manner of arranging and operating public and school baths, and regarding the results obtained by existing establishments from a hygienic point of view. Municipal authorities and civic improvement societies in all countries will be invited to send delegates. It is proposed to hold four sessions, embracing the following subjects: 1. Reading of papers regarding school, factory, mili-

tary, river and sea baths. 2. Discussion of technical questions relating to the water supply, the planning and general arrangement, the operation and the cost of maintenance. 3. Consideration of the attitude of the state, the province or county, and the community toward this social problem. 4. Relation between public baths and public health. Dr. William P. Gerhard, of Brooklyn, N. Y., has been chosen as member of the General International Committee to represent the United States, and to organize a National Committee here.

The Cost of Fighting Tuberculosis.

New York leads the States in the amount of money expended in 1911 for fighting tuberculosis. The sum of \$3,550,000 was appropriated out of public funds and given by philanthropists to bring about a condition of "no uncared-for-tuberculosis in 1915."

Throughout the United States over \$14,500,000 was spent in anti-tuberculosis work. Some of the various State expenditures were: Pennsylvania, \$2,265,000; Massachusetts, \$1,108,000; Colorado, \$746,000; Ohio, \$722,000; California, \$670,000; Connecticut, \$597,000; New Mexico, \$590,500; Illinois, \$474,420, and Maryland, \$390,000.

Of the large total nearly \$12,000,000 was used for treatment in sanatoria and hospitals and for the erection of various kinds of institutions.

The educational campaign against tuberculosis cost over \$500,000, and \$1,300,000 went for treatment in open air schools in prisons and insane hospitals.

Appropriations of over \$10,000,000 for tuberculosis work in 1912 have already been made by State legislatures and municipal and county bodies. Of this sum about \$4,700,000 is from State appropriations, and about \$5,700,000 for county and municipal purposes. In addition to these sums, the Federal Government spends about \$1,000,000 every year, supporting its several special tuberculosis sanatoria.

New Typhoid Test.

Prendergast's test consists in injecting with a fine hypodermic needle a few drops of a suspension of dead typhoid bacilli of the strength of less than 5,000,000 per c.c., says J. A. M. A. After the solution has been injected intradermally (care always being taken to raise as superficial a bleb as possible and with a well-mixed solution) in twenty-four hours the non-typhoid patient shows a well-marked area of redness around the point of injection. The typhoid patient shows absolutely no reaction. The reaction (as a rule) begins to appear in twelve hours, reaches its maximum in twenty-four hours, and has disappeared in 48 hours. Any redness after forty-eight hours is considered an infection and is not taken as a reaction. This test gives no constitutional reaction (rise of temperature, malaise, chill, etc.), and has no elements of danger. In the negative cases (controls) a few patients have complained of slight soreness and itching at point of injection twelve to twenty-four hours after the injection was given. This quickly subsided without treatment and gave no after-trouble.

Intestinal Stasis.

Many surgeons believe intestinal stasis is due to undue mobility of the cecum and remedy this by anchoring the cecum to the parietes. If the cecum is unusually voluminous Wilms advocates ileo-transversostomy. Others, on the theory that dilatation of the cecum is of more importance than undue mobility, lessen the size of the cecum by plicating its walls or by combining cecopexy and cecoplication.

In the diphtheria ward at St. Thomas' Hospital, London, it has been the custom during the last few years to administer calcium salts with the object of influencing the severity of antitoxin rashes.

THE PHYSICIAN'S LIBRARY

Operative Surgery—For Practitioners and Students.—By John F. Binnie, A. M., C. M. (Aberdeen), Surgeon to the General Hospital, Kansas City, Mo., etc. Fifth edition; 1153 pages and 1365 illustrations. Cloth, \$7 net. Philadelphia; P. Blakiston's Son & Co. 1911.

This useful work on surgery appears for the first time in one volume and its appearance is greeted with the warm welcome one accords an old and valued friend. The illustrations, which have always been a feature, have increased from 560 in the first edition, to 1,365 in the fifth, and more than 100 of these are new. It would be hard to add to the commendatory words which we have published regarding other editions of this work. It is generally recognized as a clear and comprehensive exponent of the latest in surgical science. Among the more interesting subjects treated are the Gasserian Ganglion, by Cushing; Sympathectomy, by Jonnesco; the Pancreas, by Moynihan and the Parathyroids, by Halstead and Evans. Practicability seems to have been uppermost in the author's mind in the preparation of this volume.

Retinoscopy (Shadow Test).—By James Thorington, M. D., Professor of Diseases of the Eye in the Philadelphia Polyclinic, etc. 6th edition; revised and enlarged cloth. \$1 net. Philadelphia: P. Blakiston's Son & Co. 1911.

The determination of the errors of refraction is a necessary part of the physician's work and it is a pleasure to see such an excellent exemplar of retinoscopy attain such popularity. The book is a veritable multum in parvo, so simply expressed that it can be readily appreciated by the student and the practitioner who has paid no attention to this branch of work.

Diseases of the Skin and the Eruptive Fevers.—By Jay Frank Schamberg, M. D., Professor of Dermatology and Infectious Eruptive Diseases in the Philadelphia Polyclinic and College for Graduates in Medicine. Second edition, revised. Octavo of 573 pages, 235 illustrations. Cloth, \$3 net. Philadelphia and London. W. B. Saunders Company, 1911.

Next to a post graduate course in dermatology, we recommend a careful perusal of this work. The photographs of various skin lesions are remarkable for their excellence of detail. Many of them give the reader a perfect conception of the particular disease without reference to the text. The essential facts of skin diseases are laid down in systematic fashion, with especial emphasis laid upon the practical fundamentals. Added to this is the splendid illustrating, affording renewed interest to instructive reading pages. Aside from a thorough revision, the chapter on Pellagra has been rewritten and enlarged and new chapters added on Vaccine Therapy, Grain Itch, Refrigeration and Sporotrichosis. The chapter on Syphilis is exhaustive, from an etiologic, pathologic and diagnostic standpoint, and in the treatment he emphasizes Ehrlich's Salvarsan "in all cases where no distinct contraindications exist." He is an ardent advocate of the Wassermann test.

Principles and Practice of Physical Diagnosis.—By John C. DaCosta, Jr., M. D., Assistant Professor of Clinical Medicine, Jefferson Medical College, Philadelphia. Second edition, revised. Octavo of 557 pages, with 225 original illustrations. Cloth, \$3.50 net. Philadelphia and London, W. B. Saunders Company, 1911.

The importance of sphygmomanometry and its allies as a diagnostic aid is fully recognized by Da Costa in the second edition of his work on Physical Diagnosis. His section on the methods and technic of physical examination is well worthy of study of the practitioner. Sphygmography, cardiography, thoracometry and cyrtometry are fully discussed, technic is explained and various instruments are shown by illustration. Much of this edition resembles the first except that the photographs and drawings are better. As before the author particularizes upon the diseases of the thoracic and abdominal cavities. His extensive clinical reference coupled with a lucid, comprehensive and pleasing style, has resulted in the formulation of a volume well worthy of the honored name of Da Costa.

Further Researches Into Induced Cell—Reproduction and Cancer.—Papers by H. C. Ross, M. R. C. S.; J. W. Cropper, M. B., and E. H. Ross, M. R. C. S. The McFadden Researches. 63 pages; illustrated. Philadelphia: P. Blakiston's Son & Co. 1911.

This little book gives the results of the further researches into cell reproduction by H. C. Ross, since the publication of his last work on the subject. Contrary to the usual acceptance Ross believes that normal cell production is caused by chemical agents, rather than that it is functional on the part of the cell, and that it absorbs a certain amount of specific chemical substances before it is able to divide. He specifies the chemical agents and asserts that the death of cells effects a reproduction of their living neighbors. On this assumption, Ross builds up a unique theory, which while interesting will require much further research to be accepted as fact.

Wellcome Tropical Research Laboratories of Gordon Memorial College, Khartoum, 4th report.—By Andrew Balfour, M. D., F. R. C. P., Edin., D. P. H., Camb. Director. 400 pages, cloth. Published for the Dept. Education, Sudan Government, Khartoum. London; Bailliere, Tindal & Cox. New York; Toga Publishing Co., 35 West 33d St.

This handsomely printed book is a valuable addition to the literature on tropical diseases. The medical laboratories were founded in 1903 for: (a) The study of tropical hygiene and of tropical disorders, both of man and beast, especially the communicable diseases peculiar to the Sudan; and to render assistance to the officers of health and to the clinics of the civil and military hospitals. (b) The study of plant diseases, both those due to fungi and other vegetable parasites, and those caused by insects; the study of harmful and beneficial insects, and especially of insects in their relation to tropical medicine. (c) To carry out investigations in connection with cases of poisoning, and to develop methods for the detection of the toxic agents which may be employed by the natives. (d) To carry out chemical and bacteriological tests in connection with water, food-stuffs, and other sanitary questions.

The object of foundation has been admirably carried out, as is evidenced by the work shown in the reports. The present edition deals largely with the work of the sleeping sickness and Kala-azar commissions. Another feature is a paper by Dr. Balfour on the fallacies and puzzles met with in blood examinations in the tropics and elsewhere. He summarizes for the first time, in English at least, the difficulties and deceptive appearances with which the hæmatologist has to contend. An extended research on fowl spirochaetosis has demonstrated the important role played by the "infective granule" in this disease. Other papers include records of work on trypanosomiasis, human spirochaetosis, kala-azar, forms of cutaneous leishmaniasis, veldt sore, diphtheria, human botryomycosis, veterinary diseases, etc., etc.

Aside from the reports of the commissions, which are instructive to every physician, and of especial value to those practising in tropical countries, we find the papers by Dr. Balfour on spirochaetæ of decided interest. The book is beautifully printed, carefully edited and is a decided credit to its editors and publisher.

Calcium Soap in the Gall-Bladder.

The presence of soap in the bladder itself is of the rarest occurrence, but soap in the bile duct has been found. Churchman, in the *Johns Hopkins Hospital Bulletin*, July, 1911, reports the findings of an operation. Two interventions, a year apart, were done. At the first, some faceted stones and a quantity of calcium soap were found. On an agar-slant a culture of typhoid bacilli was grown. The Widal taken was positive. A year later, for persistent sinus, the second operation revealed nothing. Recovery was good, however. Churchman gives the report of Hammarsten upon bile: calcium negative. Birch and Spong give no calcium content.